TWO HUNDRED YEARS OF RAILWAYS

Enlarged Issue

MODERN TRANSPORT

Special Articles

"THE TIMES" OF THE TRANSPORT WORLD

VOL. LXXIX No. 2043 [Registered at the G.P.O. as a newspaper] LONDON, MAY 24, 1958 PRICE NINEPENCE

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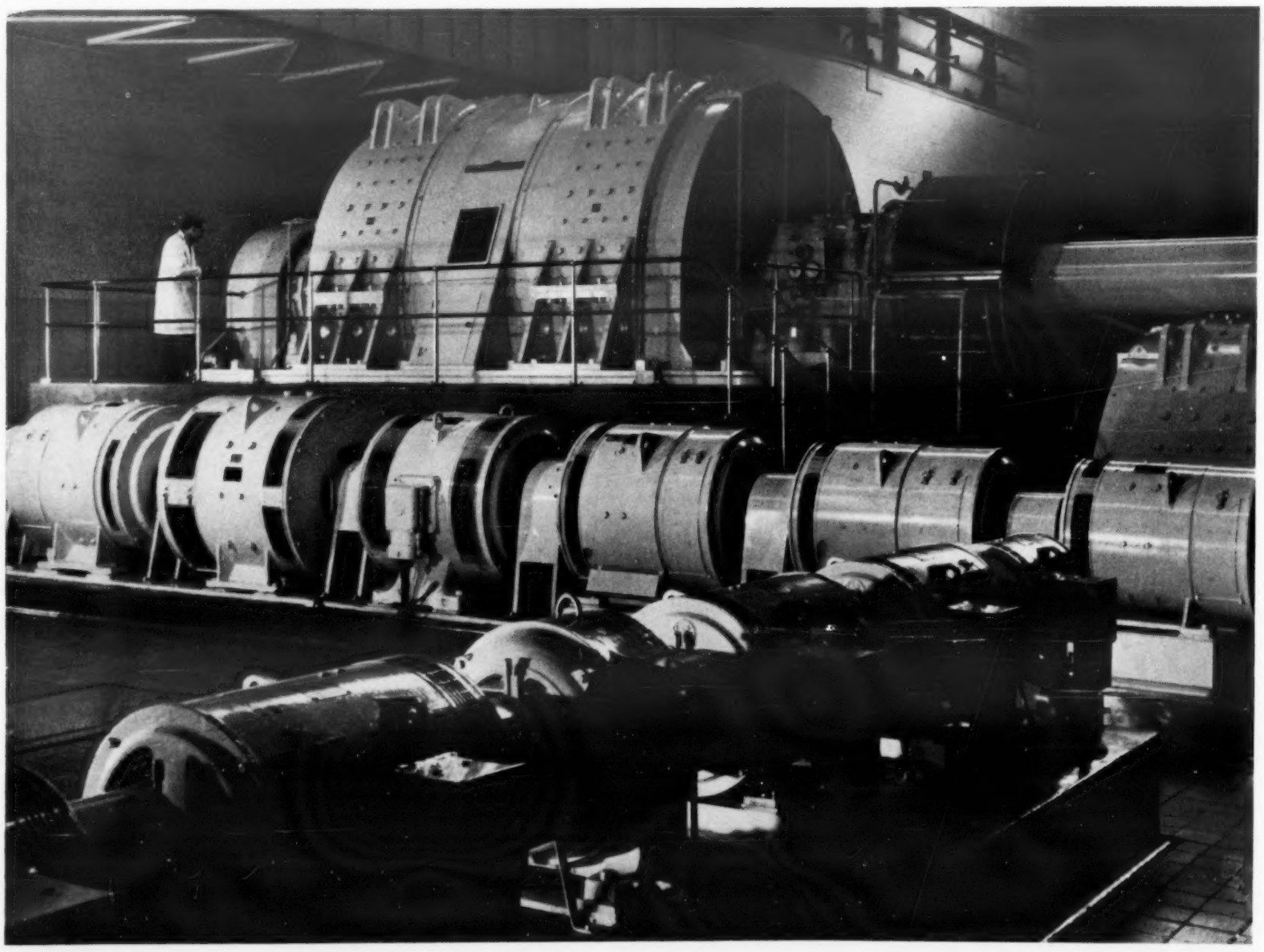

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TWO HUNDRED YEARS OF RAILWAYS

MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

RAILWAYS' ROLE IN ECONOMY STILL VITAL

See Page 3

TWO CENTURIES OF RAILWAY LEGISLATION

See Page 5

VOL. LXXIX No. 2043 [*Registered at the G.P.O. as a newspaper*] LONDON, MAY 24, 1948 PRICE NINEPENCE

Reason on the Railways

AGREEMENT by the three railway unions to the terms proposed by the B.T.C. (acquiescence of the N.U.R. executive having tardily followed further submissions to Sir Brian Robertson) has averted the threatened railway strike. Honour is satisfied and the Government can claim that there has been no departure from the principle that wages increases must be earned. Speaking at Camberley, Mr. Harold Watkinson, Minister of Transport and Civil Aviation, was at pains to explain the official attitude. Urging that the settlement was strictly within the principles of the Government's anti-inflationary policy, he said that by working together the Government, the Commission and the unions had already started to improve the Commission's financial position not on the basis of promises but on that of actual performance. The wages increase was not inflationary because it was being found by the industry itself within its own resources. He suggested that this should be realised by other employers; if all of them granted no more than a 3 per cent increase to be found within their own resources then we should have beaten inflation the right way. What the railways had done was to help themselves, and the settlement was one that should be welcomed not only within the railway industry but by the country as a whole. In a statement welcoming the agreement the Commission reaffirmed its undertaking to achieve substantial reductions in working expenses, which must include some drastic cuts in passenger services, though nothing would be done to prejudice the standard of freight services; on the contrary, steps to improve these services would be intensified. The aim is to achieve economies to the tune of some £21 million; obviously very little can be realised by June 30 when the increases will start to operate.

Speeding Modernisation

EVEN with the greatly increased co-operation of the users' consultative committees the closing of unremunerative branch lines must take appreciable time, and the recasting of forthcoming timetables must be done with care if public satisfaction is not to be sacrificed and gross revenue materially reduced. With goodwill between men and management much can be achieved, but saving in railway operation is a tricky business and cannot be obtained overnight. Meanwhile both Commission and unions are to be congratulated on the triumph of commonsense which it may be hoped will continue to prevail over impending difficulties. In its statement the Commission acknowledges the assistance given by the Government in overcoming a difficult situation. In particular it welcomes the assurance that the Government will give any necessary support to reductions in uneconomic services. The assistance given by the Government has been an essential factor in the final settlement. The attitude of the trade unions and of the men whom they represent has justifiably commended itself to public opinion. On its part the Commission has undertaken that substantial reductions in working expenses will be achieved. It will fulfil this undertaking. The assurances received from the Government and from the trade unions will enable it to carry through the extension and intensification of the programme of rationalisation already introduced on the railways. This programme must include some drastic reductions in passenger services. The regional managements, however, in making these reductions will take the utmost care to cause the minimum of inconvenience to the travelling public. Customers in trade and industry are assured that nothing will be done to prejudice the standard of freight services which British Railways offers. On the contrary, steps to improve these services will be intensified. This settlement will permit all on British Railways to concentrate their efforts on speeding the modernisatoin plan. We report on page 24 proposals for London Transport railwaymen; mediation with London busmen is beginning at the Labour Ministry.

CURRENT TOPICS

Exhibition at Longbridge

STRIKING evidence of the suitability of Austin commercial vehicles for adaptation for special purposes and of the favour in which they are held by the specialist bodybuilders is provided this week at Longbridge, where the Austin Motor Co., Limited, has staged the largest privately organised exhibition of special commercial vehicles ever to be held in this country. No fewer than 142 vehicles are displayed, with bodies for practically every conceivable purpose on chassis ranging from the 5-cwt. van and recently introduced four-wheel-drive Gipsy up to the tractor semi-trailer combinations for 12-ton loads. Although the 142 exhibits are all developed on a range of about 10 basic chassis, there is little repetition to be seen since, apart from the great variety of special bodies, there are nearly 100 different chassis and body specifications in the complete Austin commercial vehicle range. Among the more interesting specialist bodies, some of which we shall be describing in a forthcoming issue, are various mobile shops, a six-stall horsebox on a 5-ton chassis, a Litex insulated meat van with electrically operated Market loader on a 3-ton chassis, the Fisholow Cargon system on a 7-ton chassis and numerous containers, trailers and special fitments covering the whole range. The exhibition should certainly achieve its major aim of stimulating sales and will have the additional benefit of bringing together commercial vehicle users and specialist coachbuilders from all over the country.

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Automatic Approaches and Landings

IN the course of his comprehensive and, in places, humorous review of the British part in the development of automatic flight, Dr. C. W. Gardner, director of the Royal Aircraft Establishment, delivering the 46th Wilbur Wright Memorial Lecture of the Royal Aeronautical Society last week, said that one excellent example of how the value of the modern automatic pilot, by virtue of its flexibility could be extended, lay in its contribution to the problem of automatic approach and landing. Air transport completely independent of weather conditions had yet to be achieved on an operational basis, but automatic pilots were being used more and more to enable aircraft to operate with regularity and safety in adverse weather. In particular, low cloud and poor visibility in the terminal area were still limiting factors but the effects of these are being reduced by the use of automatic approach. Both civil and military operators were now using auto-pilots which enabled automatic approaches to be made in conjunction with the radio approach aid I.L.S. (Instrument Landing System) down to a height of about 200 ft. The I.L.S. position information was unsuitable for landing and it was necessary, therefore, to provide supplementary methods to cover the landing manoeuvre from a low height on the approach to a point at which the aircraft might taxi with safety. In one such system in course of development at R.A.E., an automatic I.L.S. approach was made to a low height when the I.L.S. inputs to the auto-pilot were switched automatically; the localiser signal was replaced by a magnetic leader cable signal and the glide path signal by a radio altimeter signal. Leader cable guidance was provided as far along the runway as necessary to cover the aircraft ground run and might be extended to cover the taxi-ing of the aircraft. The radio altimeter information was used to reduce the rate of descent by controlling a flareout on to the runway and control of throttle was also programmed to reduce the engine thrust on the flare and just before touch down any drift due to crosswind was automatically removed.

Successful Experiments

ONCE on the ground, automatic control could be disengaged and the aircraft brought to rest manually. The pilot was assisted by steering instructions presented on a flight director which formed part of the fully integrated instrument and automatic control system. Numerous safety features and confidence checks had been built into the system to guard against failures and the whole operation could be monitored by the pilot on the flight director. During the past three years, aircraft attached to the blind landing experimental unit at R.A.E. had made over 450 landings under automatic control, 400 in a Varsity and 50 in a Canberra. In some landings, manual control of throttle was exercised but in all cases all flying controls were operated automatically; 125 of the 450 landings were made during February this year without any trouble or adjustments. These landings had been supported by over 1,150 touchdowns made with only partial automatic control, for example, control in one plane only or an automatic flareout to a datum a few feet above the runway. Of these 1,150, a Varsity had made 800 and a Canberra 350. The aircraft had suffered no damage in making these 1,600 partial, or completely, automatic landings—an encouraging achievement.

Computer-Compiled Timetables

AT the instance of the British Transport Commission's Electronics Advisory Panel, operating staff of the London Midland and Eastern Regions of British Railways, working in collaboration with representatives of the English Electric and Ferranti companies on their respective electronic computers Deuce and Pegasus, are studying the problem of revising and constructing railway timetables by computers. It is claimed that British Railways is leading the world in this particular application of computers. Two parallel but independent approaches to the task have been made. In the case of the London Midland Region and English Electric experiment, it was decided in the first place to try to instruct the computer to provide timings for special trains superimposed upon the timetable train service and at a later stage to carry out a seasonal revision of the existing timetable for a chosen section of line with the object of improving the passenger train services. In the case of the Eastern Region and Ferranti, the intention is eventually to produce a timetable which would make the best use of the line capacity and the rolling stock and train crews available. Means had to be devised for defining logically the large number of technical operating factors involved in the timing of trains—track-running facilities, loop lines, junctions, headways, priority of one class of train over another, etc.—in exact detail suitable for inclusion in a computer programme. Many of these problems have been solved and with a degree of accurate precision into the bargain. The successful conclusion of these experiments would greatly facilitate the half-yearly timetable revisions, and accelerate the timing of special train programmes for bank holiday periods and other seasonal events and of individual special trains: it will also eliminate much laborious and monotonous clerical work in the preparation and checking of timetables. However, the economic aspects of using machines for these purposes will eventually have to be considered; they may well make it possible to produce an improved timetable plan with less call on the facilities available and so lead to real economic benefits out of all proportion to the cost of making the timetable. Further developments will be studied with keen interest.

Eastern Region Summer Trains

THE summer timetable of the Eastern Region, which, in common with those of the other regions of British Railways, takes effect on June 9, contains a number of new developments and accelerated train services despite the many engineering works connected with the modernisation plan with their consequential speed restrictions. As previously indicated in MODERN TRANSPORT, use of the 2,000-h.p. diesel-electric locomotives on London—Norwich trains such as *The Norfolkman*, *The Broadsman* and *The East Anglian* releases Britannia-class engines for the London—Clacton service and some trains thereof will be accelerated by up to 15 min. A new named train, the *Essex Coast Express*, will leave Clacton at 7.51 a.m. Mondays to Fridays and return from Liverpool Street at 5.27 p.m. The up journey will take 89 min. and the down journey three minutes less. The *Elizabethan* will be restored to the timetable and work nonstop between London and Edinburgh and the two capitals will also be linked by a new sleeping-car service leaving Kings Cross at 9.50 p.m. every night including Sundays. The 10.10 a.m. from Kings Cross to Glasgow will now leave at 11 a.m. and take 37 min. less on its journey and an interesting development is that the Saturday trains from Hitchin to Scarborough (8.20 a.m.) and Skegness (9.50 a.m.) will commence their journey at Hertford North at 7.45 and 9.10 a.m. respectively. Multiple-unit diesel train services will be further improved and additional evening workings will be provided in the Lincolnshire area.

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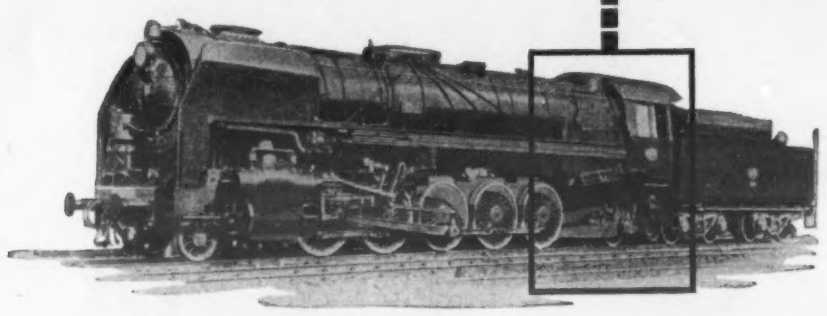

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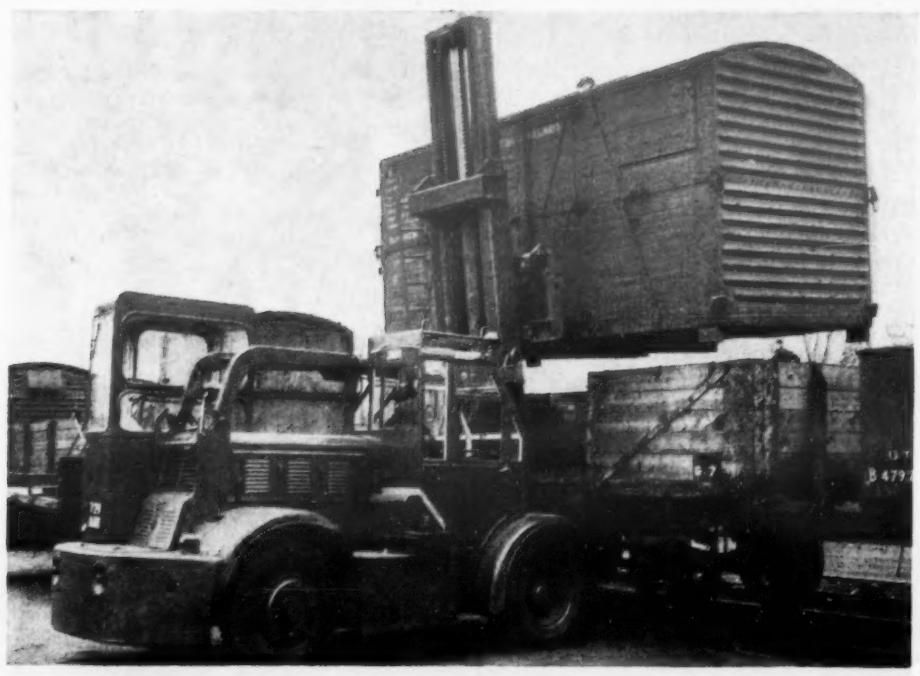

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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

We desire to call the attention of our readers to the fact that Russell Court, 3-16 Woburn Place, London, W.C.1, is our sole London address, and that no connection exists between this newspaper and any other publications bearing somewhat similar titles.

Two Centuries of Railways

NO hen-and-egg question could be so complex as that of how far the development of transport was responsible for the extent of the industrial revolution or whether it was forced on by the potential of goods and raw materials clamouring for conveyance. The extraordinary scientific and manufacturing progress of the past 200 years has certainly far transcended not merely that of the previous 200 but of the preceding milennium. The discovery of steam power interacted upon demand for coal and iron ore, calling for easier means of moving heavy loads; as a result the wagonway developed from the Elizabethan era onward. Until two centuries ago such innovations, built over private land by private arrangement of way-leaves or by the landowner, had gone more or less unremarked. Then, however, Charles Brandling wanted to convey coal from his Middleton Colliery to Leeds by wagonway and having some doubt as to the security of tenure of certain of the lands to be traversed he secured an Act of Parliament to give permanence to his proposals. This, the first Act for a railway, received the Royal Assent on June 9, 1758. Another milestone was the passage of the first Act for a public railway, that incorporating the Surrey Iron Railway Company, on May 21, 1801. A review of some of the legislation connected with railways over the two centuries appears on page 5. The Middleton Colliery line has another claim to fame in view of the introduction in 1812 of commercially successful steam traction upon it through the combined enterprise of Matthew Murray, the locomotive builder, who had earlier designed the two-cylinder machine with the 90-degree crank arrangement, and John Blenkinsop, viewer at the colliery, who introduced the rack rail as he was doubtful about friction drive.

The Power of the Railway

IT is not inappropriate that on June 7 next members of the Railway and Canal Historical Society, in conjunction with the Railway Correspondence and Travel Society, will traverse the Middleton Colliery line, now the property of the National Coal Board, and that an exhibition should be staged in the Central Library, Leeds, for the occasion. For upon this demonstration of commercial prowess in Yorkshire was founded the dogged persistence of George Stephenson and his Quaker supporters in overcoming the teething troubles of steam power. An atmosphere favourable to railways was created by William James; a traffic potential existed greater than the canal and highway system could handle; and in two decades, despite obstacles and opposition, Britain was leading the world in a new form of transport which in half a century was not only to change the economics of the land of its birth, but was to do the same across Europe and to make possible the spread of population—and even of civilisation itself—across the Americas, Africa and Australia. The railway stimulated and served the industrial revolution and played its vital part in enabling the world to sustain a larger population, both by creating wealth and making new resources available and by enabling the distribution of food in unprecedented quantities over vast areas of land unserved by inland navigations. The railway system mitigated the famines of India and terminated the slave trade in Central Africa, among many other wonderful achievements. But the age of mechanisation which it initiated also brought with it the promise of destruction, for the arrival of the internal combustion engine sparked off the development of mechanical road transport and air transport, its powerful twentieth-century rivals in speed and convenience.

Revivification

PRUNING and modernisation have therefore in the latter half of the twentieth century become the watchwords of all lively railway administrations. The railway is no longer universally needed to provide transport to every minor community and to the far ends of sparsely populated territories. There are more economical means of transport for such purposes. But railways remain the finest mass production land transport machine yet devised for wholesale transport or long-distance conveyance at reasonable speed and price. They can be brought to fit into this conception by the closing of minor stations and depots, the shedding of branches and other facilities where road or air can do the job better, and concentration on the bulk transits between large centres of population and inside the great conurbations. The modernisation process has been going on in one form or another all over the world. Our own programme started somewhat late and was announced in 1955, although it incorporates work initiated earlier. It provided at 1955 prices for an expenditure of roundly £1,200 million, of which almost half was derivable from renewal funds. It comprises plans for power brakes on freight wagons, modernised signalling and realignments to increase line capacity and provide for speeds on selected routes of 100 m.p.h.; depot, marshalling yard and station reconstruction to match; the elimination of steam traction, with diesel locomotives or multiple-unit railcars over much of the system and main-line electrification, using high-voltage current at grid frequency (50 cycles) between London and the Kent coast, London and East Anglia, London and Yorkshire, and London and Lancashire, with new suburban electrifications in North-East London and around Glasgow. Tangible results are now to be seen and the currently concluded wages negotiations are based both on the achievement of economy and expectation of new traffic under the plan, with a cutting out of dead wood where traffic has withered.

Suppliers to the World

WITH a new system of transport to place at the world's disposal Britain immediately became an exporter of railway know-how; we provided engineers, operators, and equipment and much of the world's railway system bears evidence of our influence. The British railway manufacturing industry in particular has always been held in high repute the world over for permanent way material, signalling apparatus, carriages, wagons and locomotives, notwithstanding the limited home market resulting from the traditional construction of considerable quantities of British railway needs in the workshops of British Railways. One of the virtues of the extensive dieselisation and electrification of our home railways is that manufacturers should have readily available to them in our modernised system a proving ground for their products which should be invaluable to their export activities. In the construction of notable bridges we continue to achieve fame. Although two centuries have elapsed since the passage of the first Act of Parliament relating to railways, there can be little doubt that the railway can still play a vital and useful part in the transport facilities of these islands and that technically British Railways and the British manufacturer are still in the forefront; in the 1960s it will be as true as in the 1830s that the overseas purchaser of railway equipment can learn much from our railway system and profit from dealings with our manufacturing industry.

Forthcoming Events

May 31.—Light Railway Transport League. Paper by Mr. V. E. Burrows, "The Tramways of Rome." At 153 Drummond Street, N.W.1. 3 p.m.

June 3-6.—Institute of Transport. Congress. In Dublin.

June 6.—Railway Club. Paper by Mr. D. Cullum, "The Hastings Direct Line." At Royal Scottish Corporation, Fetter Lane, E.C.4. 7 p.m.

June 7-12.—Permanent Way Institution. Summer Convention. At Weston-super-Mare.

June 15.—Permanent Way Institution. Visit to new Tunnel works, Greenwood-Potters Bar. (E.R.).

June 20.—Permanent Way Institution. Visit to new Tunnel works, Greenwood-Potters Bar (E.R.).
Institute of Navigation. Discussion, "The Significance of Blunders in Navigation." At Royal Geographical Society, 1 Kensington Gore, S.W.7. 5.15 p.m.

September 1-7.—Society of British Aircraft Constructors. Flying display and exhibition. At Farnborough. (Public days September 5, 6 and 7.)

September 26-October 4.—Commercial Motor Transport Exhibition. At Earls Court.

November 5-16.—International Motor Show. At Turin.

MODERN TRANSPORT has an arrangement with Reuter's Trade Service whereby publication is made in this newspaper of all essential news from all parts of the world concerning traffic and transport by rail, road, sea and air and allied interests.

RAILWAYS' ROLE IN MODERN ECONOMY IS STILL ESSENTIAL

Concentrating Modern Equipment on Worthwhile Services

By Sir BRIAN ROBERTSON, Bart., G.C.B., G.B.E., K.C.M.G., K.C.V.O., D.S.O., M.C., Chairman, British Transport Commission

FEW industries evoke so great an interest in their history and development as do the railways. This is not merely due to a pride and sense of tradition among those who work in the industry. Even more it is through the enthusiasm of numerous devoted amateur supporters that we are constantly being reminded of the centenary or jubilee of some particular event in railway history. And so, I am sure, many railway lovers will be glad to be reminded, in this enterprising commemoration by MODERN TRANSPORT, that it is as long as 200 years ago that the first Act of Parliament was granted for a railway undertaking.

I do not pretend to be an historian, but centenaries and bi-centenaries have a value other than to the historically minded, because they afford an occasion for reassessment, a basis of comparison of problems and achievements, and a reminder to those who live in the midst of today's events that these form tomorrow's history, just as the Act of 1758 has become history in 1958.

The motive power of British Railways under the modernisation plan will be either electric or diesel

Long Sequence of Enactments

Like most pioneers, the promoters of this now almost forgotten measure could not have realised that their enterprise would be but the first in the long sequence of Parliamentary enactments in regard to railways which was to follow. Could they possibly have foreseen, we may wonder, that by the half-way mark between 1758 and the present year there would be in existence in Great Britain and Ireland over 250 railway undertakings separately incorporated by Parliament? By 1858 railways in these islands were expanding at such a rate that more than 100 railway Bills were promoted for the 1858 session, of which some 75 ultimately obtained the Royal Assent.

The lawyers will no doubt sadly bemoan the rapid decline in railway private Bill legislation which began with the virtual completion of the British railway system towards the end of the century. Subsequent enactments have been far less numerous, but they have included much more fundamental measures, such as the Railways Act of 1921, the Road Traffic Act of 1930, the Road and Rail Traffic Act of 1933, and the Transport Acts of 1947 and 1953.

Inherited Problems

It is a reasonable deduction to draw from the existence of some 250 separate railway companies in 1858, and from a promotion rate of more than 100 private railway Bills a year at that time, that some, not by any means all, of the problems which beset Britain's railways today arise from the manner of their birth. A tremendous amount of courageous private enterprise and engineering skill went to the making of this system. At the same time the public fear of monopoly imposed many hampering obligations and insisted upon competition to an extent beyond all reason. Many of the companies flourished, but it was a risky business and often the risks taken were too big. Many miles of line, many branches and stations and, indeed, at least one main line were built, for which there was scarcely any economic justification even at a time when railways enjoyed a virtual monopoly and the internal combustion engine had not yet been invented. So great was this fear of monopoly that, when one of the former companies sought to disengage itself from its obligation to build a trunk railway route extension which it feared would be too costly, the opposition was too great and it had to go ahead and finish the line.

Effect of Intense Competition

It is easy to be wise a century or so after the event, but the fact is that if the British railway system had been planned on a national scale, without such fanatical insistence upon fragmentation for the sake of competition, we should have far fewer problems to face in the modernisation of the railways and in their adaptation to mid-twentieth century economics. The reduction of well over 100 different railway companies into four main systems under the Railways Act of 1921, and the creation of a national railway system under the Transport Act of 1947, went far to simplify administration. It became possible to do away with such things as needlessly complex arrangements for exchanging traffic from one company system to another. Many difficulties remained, for example the physical and capital problems of duplicate traffic routes, of stations and branch lines built too far away from the communities they were intended to serve, and which in many cases can be now served with greater convenience and economy by road transport.

Typical facets of modernisation: Ballast cleaning machine; new signalling equipment; new station premises; prototype Craven open plan second-class coach

Railways Most Effective

None of this should be taken to mean that the British railway system as such is outmoded, or that in this closely populated and largely industrial country there is no room for a wholly modern railway system. "Contrariwise" and "no how," as the immortal twins remarked. It is precisely under the conditions obtaining in this country, which produced the first railways and still has the busiest system in the world, that railways can be used effectively for those functions for which they are properly suited. These include the inter-city and peak passenger movements, including the dense holiday and residential peaks; the haulage of freight (especially bulk traffics) over long and

(*Continued on page* 20)

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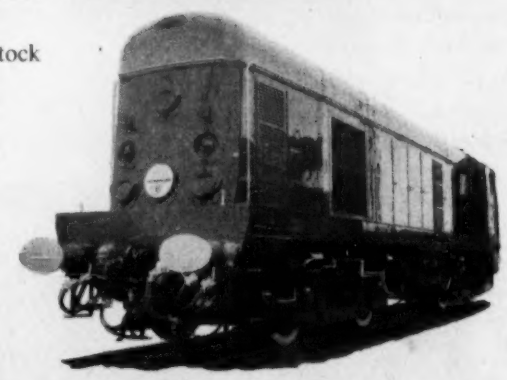

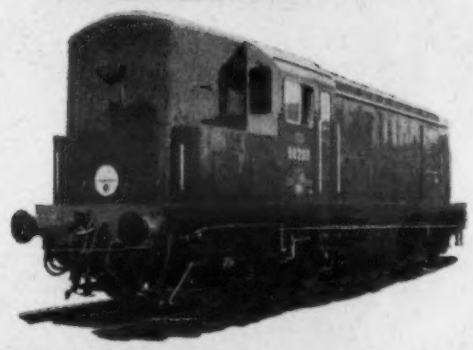

THE Pyrene TRADE MARK COMPANY LIMITED

THE PYRENE COMPANY LIMITED

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LORRY—BUS—COACH

Massive Loads Hauled from the Sea

TWELVE heat-exchanger columns for the nuclear power station at Bradwell, on the Blackwater estuary in Essex, are being towed by sea from the works of Head Wrightson, Limited, at Thornaby-on-Tees, to a prepared ramp at Bradwell, where they are floated on to submerged bogies which are then drawn out by tractors for the 1¼-mile road haul to the power station site. The first column was landed on Sunday last. It was 91 ft. long, 22 ft. in diameter and weighed 235 tons with timber packing. Sunter Brothers, Limited, of Darlington, provided a Rotinoff Atlantic 250-b.h.p. tractor and Rotinoff Motors, Limited, supplied a similar unit and a Super Atlantic 400-b.h.p. tractor, the most powerful road vehicle in Britain. Two 16-wheeled Crane bogies were used and special grease to protect wheels and brakes during immersion was supplied by C. C. Wakefield and Co., Limited. The ramp out of the water has a maximum gradient of 1 in 10 for 100 ft.

Fish Carriers' Sick Pay Scheme

UNDER union pressure, Billingsgate fish market outward carriers in London have set up a sick-pay scheme, effective from July 1, 1957. This emerges from the annual report of the Metropolitan and South Eastern area of the R.H.A. The carriers were initially approached to set up a pensions scheme where possible, in line with the R.H.A. recommendation, also a sick-pay scheme and a conciliation agreement in the event of dispute. The two latter requests have been conceded, but carriers felt that the "difficulties facing the fish-carrying industry" made introduction of a pensions scheme inopportune. The union intimated that it might make further approaches.

Service Cuts on South Coast

OPPOSED by Chichester Rural Council and Bognor Regis Urban Council, Southdown Motor Services, Limited, successfully applied to the South Eastern area Traffic Commissioners to cut its services between Bognor Regis and Elmer, Chichester and Selsey, and Westbourne and Emsworth. The traffic manager, Mr. Gerald Duckworth, said they knew how unpopular fare increases were and that if they did not reduce their running costs fares would have to go up more steeply. He concluded: "We will be back here asking you to cut out more of the dead wood." A three-month experiment with reduced fares at off-peak periods, introduced for the benefit of the councils, had been a "dismal failure," it was stated.

No Money Back on Defective Vehicle

A ROAD haulier at Sevenoaks, Kent, who purchased a secondhand Dennis 12-14 ton lorry of 1947 manufacture in 1956 for £850 failed in the Appeal Court this week to have the contract of sale rescinded on the ground of innocent misrepresentation. The haulier, Mr. S. I. E. Long, bought the vehicle from a Mr. L. T. Lloyd, of Hampton Court, Middx. Plaintiff had alleged a faulty dynamo, leaky oil seals and a cracked wheel. Giving judgment, Lord Justice Pearce said that his acceptance of the defendant's offer to pay half the cost of a rebuilt dynamo and the fact that, after complaining of the vehicle condition, it was driven to Middlesbrough amounted to a final acceptance of it and any right of recession remaining after completion of sale was extinguished. Leave to appeal to the House of Lords was granted.

Tarmac Transport Fleet

SINCE a reorganisation of the Tarmac company on a group basis from January 1 this year, the transport department has been incorporated in the newly formed Tarmac Roadstone, Limited, says the group chairman in his annual report. Tarmac, Limited, is now the non-trading parent company. Despite having to absorb severe increases in costs which could not be passed on to the customer the transport department has produced profits very comparable with the record figures of the previous year. The report notes that settlement has not been reached with the Inland Revenue authorities as to the assessment in balancing charges arising out of the compulsory acquisition of Cliffords (Fulham), Limited, a former subsidiary, under the 1947 Transport Act. When settlement is reached the company will be wound-up.

Three Rotinoff tractors totalling 900 b.h.p. haul from the Blackwater estuary at Bradwell the first of 12 heat exchangers for a nuclear power station (see this page); 91 ft. long, 22 ft. in dia. and weighing 235 tons, it had been towed by sea from the North East. On the right, the leading Crane bogie is emerging from the water

Ceylon Bus Finances

REJECTION by the Minister of Transport and Works of alternatives put forward by the Ceylon Transport Board chairman to remedy its financial position (namely, that of increasing bus fares or, alternatively, seeking a Government subsidy of £75,000 a month), and the wholesale condemnation of either alternative by the Ceylon Bus Travellers' Federation and the Press is generally regarded there as being tantamount to a vote of no confidence in the Board and its chairman, Mr. Vere de Mel. The Board is now reputedly seeking the intervention of the Prime Minister to save it from the impending crisis, by agreeing to either alternative, and overruling the decision of the Minister of Transport and Works. The alarming extent of petrol thefts from nationalised buses is now becoming apparent. The only solution, it appears, is to progressively transform the entire fleet of 3,000 buses from petrol to diesel.

Positioning of Lamps and Reflectors

CHANGES in the law relating to vehicle lamps and reflectors come into force on June 2. The minimum centre height from the ground of front headlamps (except those used only in fog or falling snow) on vehicles first registered after January 1, 1952, is reduced from 2 ft. 2 in. to 2 ft. in line with lamps on older vehicles. Obligatory rear-lamps and reflectors on vehicles registered for the first time on or after April 1, 1959, must bear the B.S.I. standard and name or trade mark of the manufacturer. On a goods vehicle carrying a projecting load which would obscure the rear lamps and reflectors if carried in the normal position, the obligatory rear lamps and reflectors must be attached to the load, instead of to the vehicle. The permitted distance from the rear must be measured from the rear of the load instead of from the rear of the vehicle. The Road Vehicle Lighting (Amendment) Regulations, 1958, cost 3d. net.

Lagos Buses Municipalised

WITH a fleet of 43 buses the Lagos, Nigeria, bus business of J. and A. Zarpas, Limited, passed under municipal ownership recently. Mr. A. F. Arkell, general manager, retains his post in what is now the Lagos Municipal Transport Service.

Free Works Services Discussed

MORE often than not, claimed a speaker at the annual conference of the Institute of Traffic Administration in Blackpool last weekend, some form of payment, indirect in most cases, is extracted from people carried on allegedly free works buses. All such cases ought to be the subject of close scrutiny by the operators concerned. Mr. R. Cox, general manager of Rochdale Corporation Transport Department, said that towns suffered from the provision of free transport by small coach operators who contract hire and allow their driver to take employees to cotton mills where the driver also works and then takes the bus back at the end of his shift. "We have had on occasion to communicate with mill owners, the Traffic Commissioners and the operators to get an assurance that no fares are charged," he said. Mr. J. C. Franklin, Blackpool manager, commented that some of the traffic carried by these vehicles could help municipal operators at peak times. Mr. Franklin also said there was no doubt that the withdrawal of workmen's and other concessions had resulted in a drop in passengers. In industrial towns young fellows "ganged up together to buy a car," shared the running costs and used it to go to work in, usually without adequate insurance cover, where previously they had travelled by bus.

Appeal on Picking-Up Point

WHEN considering whether to vary the conditions attached to a road service licence traffic commissioners are called upon to take into account all such factors referred to in subsections (3) and (4) of section 72 of the Road Traffic Act, 1930, as are relevant to the matter in hand. Where an additional picking-up point on an existing route is applied for, the factors to be considered include the extent to which a service from that point is necessary or desirable in the public interest, or will secure the convenience of the public as well as the more general considerations to which the traffic commissioners rightly drew attention, and which bear upon the apportionment of extended tours facilities between operators. This is the decision in an appeal by James Smith and Co. (Wigan), Limited, from a decision of the North Western area Traffic Commissioners. The Minister agrees with his inspector that in this appeal the evidence given (and not controverted) sufficed to justify the addition of a picking-up point at Carnforth on Smith's licence notwithstanding the more general considerations aforesaid, but he considers that the use of this picking-up point should be limited to the tours which Smith's are authorised to operate to Skye and to John o' Groats. The decision, it is stressed, has been taken on the merits of the present case as presented to him, and is not to be taken as a precedent for any future cases, which would fall to be considered entirely on their individual merits.

Bus and Coach Developments

J. S. Moncrieff, Scousburgh, Shetland, applies for a Monday service between Hillwell and Lerwick. No local traffic would be carried between Scalloway and Lerwick.

Devon General Omnibus and Touring Co., Limited, seeks to extend its Crediton—Sandford route to New Buildings on Tuesdays and Saturdays.

Kyle Brothers, Kelso, applies to make its Kelso—Earlston service one between Kelso and Galashiels via Smailholm, Earlston and Gattenside and returning via Melrose and St. Boswells. The route would be traversed in the reverse direction on alternate Saturdays and, if granted, the Kelso—St. Boswells service would be discontinued.

Greenlades Tours, Limited, applies for the extended tours from Taunton at present licensed to Bowermans Tours, Limited.

St. Helens Corporation seeks to replace its Prescot trolleybus routes by buses.

Five thousand are estimated to have availed themselves of a Leicester Corporation Transport eight-miles-for-6d. bus tour of the city streets decorated for the recent visit of the Queen and the Duke of Edinburgh. Places were again filled for a weekend tour.

From street lamps to salvage,

Austins keep things moving in Beckenham

BECKENHAM, KENT, is a sizeable borough. 6,000 acres of it stretch from Crystal Palace to Hayes. 75,000 people live in its 26,000 houses. That adds up to a lot of streets, a lot of lighting, a daily mountain of refuse, a multitude of jobs on the Works Department schedule. Transport to tackle these jobs must be reliable in every way.

Since the war, Mr. James Dove, the Borough Engineer, has been building up his fleet. Of 24 vehicles, 15 are now Austins. They range from ½-ton vans and pick-ups to 5-ton trucks. Dependable? "Our refuse collection is so exact people set their clocks by it," says Mr. Dove. How about performance? "Out of our experience of the refuse collection fleet, Austin was the make we chose for our new hydraulic platform vehicle." And of the fleet's future, Mr. Dove says, "We are gradually changing over to B.M.C. diesel."

Mr. James Dove, A.M.I.C.E.,M.I.Mun.E., says of his fleet: "We have concentrated more and more on Austins, because we find them eminently satisfactory for our great variety of jobs. Our future fleet may well be all Austins."

On call 24 hours a day in case of accidents to lamps, islands, etc., this new Omnitruck is also used to carry 15 ft. long lamp standards weighing 5½ cwt. Harry Staples, foreman of street lighting, says, "I'm very pleased with the Omnitruck. It certainly doesn't jib at its full load. For our purpose it's the ideal vehicle on the market today."

A new road grows in the borough. On hand is one of the Highways Section's 2 ton Austin tippers. Other jobs tackled by these tippers include road gritting, street sweeping, material handling and salvage.

Clock-setter. First of Beckenham Borough's diesels, this 1956 5 tonner so impressed the engineer's department by its performance they intend to concentrate on Austin diesels in the future. Driver Vic Botley is impressed too. "Austins have a pretty good vehicle here," he says.

Bright red newcomer to the Beckenham fleet—this Austin 5 ton diesel-engined chassis mounted with a hydraulic platform. The platform, rising to 30 feet, is used for tree lopping and for inspecting the 3,000 lamps in the borough's main roads— a 32-mile-a-night circuit. "A first-rate engine," says the driver, "and an easy truck to drive."

The Austin commercial range includes all-purpose vehicles from ¼ ton to 15 tons. All are warranted for 12 months and backed by B.M.C. Service—Britain's best service and parts organisation.

BMC

INVEST IN AN AUSTIN

THE AUSTIN MOTOR COMPANY LIMITED · LONGBRIDGE · BIRMINGHAM

TWO HUNDRED YEARS OF RAILWAY LEGISLATION

Wide Variety of Provisions

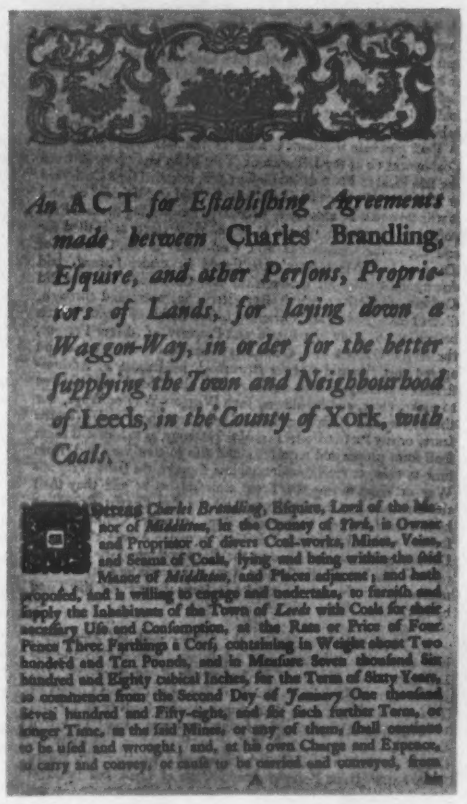
By C. R. CLINKER, President, Railway and Canal Historical Society

RAILWAY legislation falls into two distinct classes. Firstly come Bills promoted by the Government and applicable to all railways and other relevant undertakings. The first of these Acts, the Public General Statutes, providing for carriage of mails by railways, received Royal Assent on August 14, 1838. The second class, vastly more numerous, consists of Local and Personal (formerly "Private") Statutes from Bills introduced by sources other than Government, e.g. groups of promoters, private individuals, existing companies, dock and harbour undertakings and municipal corporations, seeking powers for their own limited purposes. These may be for the incorporation of a company and construction by it of a railway or other works, or for powers to make additions to an existing system, raise additional share capital or grant mortgages, and numerous other purposes requiring the sanction of Parliament.

It cannot be too clearly pointed out that the railway companies were bound hand and foot to the specific purposes for which their capital had been raised and to what purposes it might be devoted. Any use of their money outside such purposes required the sanction of Parliament by means of an Act. Thus the London and North Western company, anxious to provide a church and schools for its workpeople at Wolverton, and the Great Western to make similar provision for a mechanics' institute at Swindon, were both compelled to ask Parliament's permission for the expenditure. The setting up of staff pension and superannuation funds, purchase and operation of steamers and supply of surplus gas and water into the public mains were likewise undertaken only after the necessary Acts had been passed.

First Railway Act

The first Local and Personal Act (31 Geo. II chapter xxii) received Royal Assent on June 9, 1758. It empowered Charles Brandling to agree with landowners for the laying of a wagon-way from his collieries at Middleton to a depot in Casson Close, Leeds. Part of the site of this, the first statutory railway, is still in use for its original purpose under National Coal Board ownership. It was not until May 21, 1801, that the first railway company, the Surrey Iron Railway, was incorporated and meantime 24 more Acts had been passed authorising construction of railways or tramroads, nearly all by canal companies. Not all of these used their powers, but those made by the Trent and Mersey, Leicester, Monmouthshire, Derby, Peak Forest and Ashby-de-la-Zouch Canals played an important part in the history and economics of those undertakings.



An ACT *for Eſtabliſhing Agreements made between* Charles Brandling, *Eſquire, and other Perſons, Proprietors of Lands, for laying down a Waggon-Way, in order for the better ſupplying the Town and Neighbourhood of* Leeds, *in the County of* York, *with Coals.*

Whereas *Charles Brandling*, Eſquire, Lord of the Manor of *Middleton*, in the County of *York*, is Owner and Proprietor of divers Coal-works, Mines, Veins, and Seams of Coals, lying and being within the ſaid Manor of *Middleton*, and Places adjacent; and hath propoſed, and is willing to engage and undertake, to furniſh and ſupply the Inhabitants of the Town of *Leeds* with Coals for their neceſſary Uſe and Conſumption, at the Rate or Price of Four Pence Three Farthings a Corf, containing in Weight about Two hundred and Ten Pounds, and in Meaſure Seven thouſand ſix hundred and Eighty cubical Inches, for the Term of Sixty Years, to commence from the Second Day of *January* One thouſand ſeven hundred and Fifty-eight, and for ſuch further Term, or longer Time, as the ſaid Mines, or any of them, ſhall continue to be uſed and wrought; and, at his own Charge and Expence, to carry and convey, or cauſe to be carried and conveyed, from his

Since Brandling's Act 200 years ago, nearly 7,000 applicable to railways in the British Isles have passed through Parliament. With very few exceptions, these granted powers to railway, canal and other similar statutory undertakings for the construction of railways or tramroads. The exceptions include a few industrial concerns, individual persons, a small number concerning railway passengers insurance, the Railway Clearing House and a "Railway Working and Management Company" formed in 1882. Nearly 1,300 railway companies alone have been incorporated.

A Unique Experience

A company's Acts form the basis of its existence, since it is from this source that it derives all its powers and is, in turn, subject to a mass of regulations and restrictions, some of which have, in later years, proved to be a great handicap and unnecessary expense. These obligations and handicaps have been handed down through the Railways Act, 1921, and Transport Act, 1947 (both Public General Statutes), to the British Transport Commission, on whose shoulders they now rest. During the last few years the author has completed an examination of the 6,700 acts applicable to Great Britain. This has been a unique experience. The whole of the academic history of the railways has been unfolded steadily, with new companies incorporated, amalgamations, extensions, legal warfare, pathetic and incredible financial tangles, bankruptcies, frauds, abandonments, dissolutions and so on, all part of an immense and continually changing pattern. It is perhaps a pity that more attention has not been given to this source of railway history, for it is clear that many written accounts would have been more accurate and complete if the Acts had been consulted and understood.

Incorporation

A company's initial Act, the Act of incorporation, consists mainly of standardised provisions only differing in wording down the years. This Act incorporates certain named persons and others into a company of proprietors under the specified title, which is the company's own and indisputable legal name, whatever variant may appear on its seal, notepaper, etc. Power is given to make a railway or railways or other works, and to raise a certain amount of money by shares and loans for that and other specific purposes. Arrangements are made for the appointment of a receiver (judicial factor in Scotland) and the first directors are named. Certain periods are allowed for acquiring land and completion of the works and maximum rates and fares are set out. Power is sometimes given to enter into arrangements with another company to work, use and manage the line and to lease or sell it to that company, or others, under certain conditions.

A straightforward normal Act of Incorporation from the 1860s onwards contains about 48 sections. There may be also, additional and special provisions, some of which are undoubtedly of historical value. The larger companies, of course, obtained many Acts subsequent to incorporation and even smaller undertakings were curiously lavish with their funds for this purpose. Among the latter, the record seems to be held by the Teign Valley Company, which obtained 12 Acts between 1863 and 1884, but succeeded only in making 7¾ miles of line and loading itself with debts.

Preamble

The preamble to the Act sets the stage for what is to follow by reciting the history of the undertaking and other information relating to the powers granted in the various sections. Thus, the preamble to the Stanhope and Tyne Railroad Act of May 13, 1842, shows how the company was established by Deed of Settlement in 1834 and dissolved by Indenture of Settlement seven years later, prior to incorporation as the Pontop and South Shields Railway. It appears again in the Wear Valley Act, 1847, together with the Wear and Derwent and Shildon Tunnel Railways. In each case the names of the parties, the well-known group of Quaker industrialists, Pease, Meynell, Stobart and Hopkins, are shown.

Information about the Wearmouth Dock Company, an undertaking incorporated by Royal Letters Patent July 26, 1835, appears in the Newcastle and Darlington Junction Act, 1846, at the time of its purchase. Of a different kind is the preamble to the Edinburgh and Glasgow Railway Act, 1849, under which the Union Canal was transferred to the railway. This gives much useful information on the available water and rail transport facilities between Leith, Edinburgh and Glasgow. A little-known episode in North Staffordshire Railway history is thrown up in the preamble to that company's Act of 1859. Here is to be found the story of the company's failure to make a railway from Silverdale Ironworks to Newcastle-under-Lyme authorised in 1847, its construction by Ralph Sneyd and an explanation as to how the Newcastle Canal became involved.

Of Special Value

It is, however, from about 1860 onwards that preambles become longer and of special value. Full particulars of the agreements which led the L. and N.W. and G.W. companies to set up the Joint Committee of Management to take over the Birkenhead Railway are quoted at length in their Act of 1861. The incorporation of the Perth General Station Joint Committee in 1865 is the occasion for a lengthy history of the origins of this joint station such as cannot readily be found elsewhere. Six pages are required to give a detailed financial account of the West Hartlepool Harbour and Railway and Cleveland Railway on their amalgamation with the North Eastern in 1865.

Perhaps the most enlightening preamble of all is that to the act incorporating the Great Eastern Railway in 1862. This goes into every detail and sets out with great clarity all the Acts and full legal and financial history of the Eastern Counties (itself a most complex undertaking), East Anglian, Newmarket, Eastern Union and Norfolk Railways. Here may be found a short cut to all the main facts behind one of the most complicated of earlier large railway amalgamations.

A Scottish Example

Students concerned with the history of minor Scottish railways will find a good example in the Scottish North-Eastern Act, 1865, under which the Carmyllie Railway was purchased. From the preamble we can learn, amongst other things, that this was a private mineral railway opened in 1854, owned by the Earl of Dalhousie and worked by the Scottish North-Eastern under an agreement dated February 1, 1864. It was vested in the company on June 19, 1865, on payment to the Earl of £12,000 for track and other movables, £941 for engines and rolling stock, less £247 6s. owing to the company for "certain furnishings" made for the Carmyllie Railway. A schedule quotes the merchandise rates taken on the line. What more is needed as a starting point for research into the history of this private railway?

The preamble to the Hexham and Allendale Act, 1865, reveals that when the company's original Act was passed the previous year, it was thought the Commissioners of Greenwich Hospital, who owned much of the land and mineral rights over which the line was to be built, had power to subscribe to its capital. It was then found that the Commissioners' powers had been transferred to the Lord High Admiral of the United Kingdom who had no powers to use public money for this purpose.

The financial straits in which some of the more substantial companies found themselves, either by their own folly or from causes only partly under

(*Continued on page 8*)

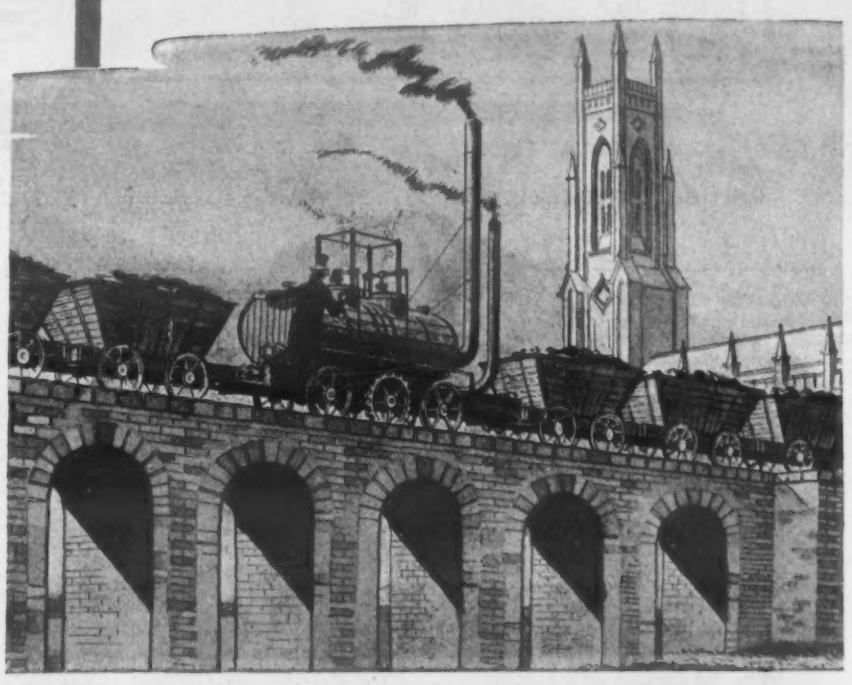
The Leeds Tradition . . .

Although railway history goes back to Biblical times, it was the advent of the steam locomotive that made the railway as we know it possible. It was at Leeds, and not 100 yards from our works, that the first locomotive went into commercial operation.

Matthew Murray built this locomotive, illustrated below, in 1811 at his works in Water Lane and placed it in service hauling coal from a colliery at Middleton to Leeds Bridge.

We cannot claim to have built the first locomotive but the Hunslet Engine Company has inherited the traditions of a hundred and forty years of locomotive building in the City of Leeds: traditions made by firms whose names were household words in the railway world. Add to this our experience of nearly 100 years of locomotive manufacture in Jack Lane and that of our incorporated firms, the Avonside Engine Company of Bristol and Kerr Stuart and Company of Stoke. That is the tradition behind every new "Hunslet" locomotive.

Generations of Leeds craftsmen have served the industry and now at the Engine Company, father is followed by son, be it as Director or Craftsman, in the tradition that Matthew Murray started.



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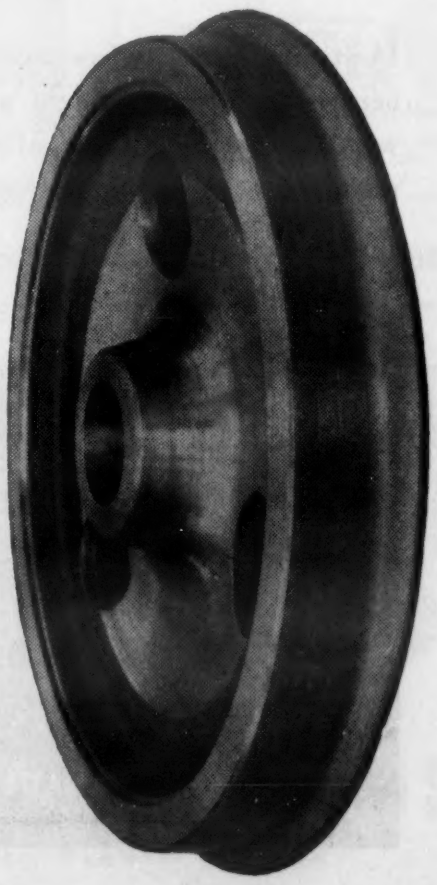

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Dowty Hydraulic Buffers provide benefits of greater freight and wagon protection which effect new economies in railway freight transportation.

TRANSPORT OF PERISHABLES

Temperature Rules

NOTES for the guidance of providers and users of perishable foodstuffs transport* have recently been formulated by the inland transport committee of the U.N. Economic Commission for Europe, based in the main on a report requested of the International Institute of Refrigeration. The E.C.E. publication notes that perishable foodstuffs are not always carried at present in conditions most favourable for their conservation.

Perishable foodstuffs are defined as foodstuffs which, by reason of their physical, chemical and biological instability and, possibly, of the reduction in temperature they have undergone, are sensitive to atmospheric conditions and particularly to temperature. Special precautions are therefore necessary in distribution to prevent or limit deterioration. Three categories of perishables are distinguished:

(*a*) *Fresh foodstuffs*, those that have not been treated and their natural condition altered and whose temperature is that of the outside atmosphere or that to which they have been brought by cooling or warming. (Included in this category are bacon, smoked fish, etc., which although treated retain their perishable characteristic.)
(*b*) *Frozen foodstuffs*, which have been refrigerated to −7 deg. C. and must be retained at a temperature between −7 deg. C. and −18 deg. C. to maintain their frozen condition.
(*c*) *Deep-frozen foodstuffs*, which (with certain exceptions) have been refrigerated to −18 deg. C. or lower and must be kept at that temperature or lower.

Loading Precautions

Perishable foodstuffs carried long distances must be free from microbial injury, mechanical damage or physiological disorders such as over-ripeness and must be properly protected during handling, transport and storage. All necessary measures must be taken to ensure that packages are so stowed as to ensure their stability and (for fresh commodities) that there is adequate ventilation.

For every foodstuff, it is stated, there is a thermic scale within which its biological development is slowed down and it is essential that the temperature be brought within that range of temperatures as soon as possible after picking, gathering or catching. If the pre-transport temperature is above the scale the foodstuff should be pre-cooled, either before loading or in the transport equipment before it leaves on a journey. Annexes contain "recommended" and "acceptable" transport temperatures for fresh foodstuffs. If none of the recommended or acceptable temperature limits is observed there is the risk that the subsequent storage or marketing life of the goods after transport may have been further decreased. The annexes referred to show temperatures to be observed during two- to three- and five- to six-day transits.

Temperature Rise During Transport

Frozen and deep-frozen foodstuffs are presented for transport at the required loading temperature, i.e. that of their surroundings while in cold storage and temperature during loading and transit must not rise above a certain point. Further annexes show recommended and acceptable temperatures for transport of frozen and deep-frozen foods as well as the maximum acceptable temperature rise during transport, i.e. from time of commencement of loading.

In the absence of sufficient mechanically refrigerated transport for all needs, says the report, it is necessary to select the most economic class of transport equipment (ventilated, insulated, refrigerated, mechanically refrigerated, or even heated vehicles) for the operation envisaged, or to ascertain what equipment may be substituted for the most appropriate without risk of damaging the goods. Factors to be taken into consideration in determining the type of equipment are:

(*a*) Thermic scale within which the consignment should be maintained, having regard to the transport time;
(*b*) loading temperature;
(*c*) average and maximum outside temperatures expected;
(*d*) heat accumulated in foodstuffs and packing;
(*e*) heat given off in respiration, fermentation, etc.;
(*f*) heat transfer factor and average surface area of the walls of transport equipment;
(*g*) heat accumulated within the insulating body and its accessories;
(*h*) heat produced by fans or motor of any cooling appliance;
(*j*) for refrigerated, mechanically refrigerated or heated vehicles, heat absorbed by the cooling agent or given off by heating appliances in the equipment.

A formula appended renders it possible to determine not only the type of equipment to be used, but also the quantity of cooling agents required for icing or re-icing en route, or the cooling or heating power required of inbuilt plant. Examples of the application of this complex formula are also included. It requires 11 known factors.

* *Transport of Perishable Foodstuffs*, available on order from H.M. Stationery Office, price 1s. 6d. net.

★

BUSES IN DELHI

Record of Leyland Group Vehicles

INTERESTING details of a fleet of over 400 single-deck buses operating in one of India's largest cities have been provided by Mr. S. Saigal, the production engineer of Delhi Transport Service, who has just completed a six-month maintenance course at the Lancashire factories of Leyland Motors, Limited. Delhi Transport Service has always favoured British vehicles, the majority being supplied by the Leyland group. During the years 1948-49, Delhi acquired a fleet of Albion single-deck buses which are still running satisfactorily in daily service.

Four years later Delhi took delivery of 83 forward-control and 34 semi-forward-control Leyland Comet chassis with General Motors 43-seat 30-ft. steel bodies. These are still returning fuel consumptions of 13 m.p.g. after covering approximately 200,000 miles. Between 1954 and 1955, a further 170 aluminium-bodied Comets were introduced, 90 with bodies built by Depodi and 80 with Simpson bodies. Operating in congested streets, often overloaded, the 100-h.p. diesel-engined Comets show a fuel consumption of up to 15 m.p.g. The daily mileage covered by Delhi's fleet is 36,000 to 40,000 miles.

Popular Worldmaster

In 1957, the first consignment of Leyland Worldmaster underfloor-engined buses was placed in service by D.T.S. Fitted with two-door Allwyn bodies, the 134 Worldmasters accommodate 46 seated passengers with adequate room for 15 standing in wide gangways. Popular with the drivers because of the two-pedal controls, they are also very popular with D.T.S., the fuel consumption being 11.5 to 12 m.p.g.

There are four depots in use at present, each one equipped with modern servicing equipment, and a fifth depot is nearing completion; this will be able to accommodate approximately 250 vehicles. Mr. Saigal has spent three weeks with municipal transport departments, two with Preston and one with Manchester, observing how they tackle their transport problems.

PORTABLE SUCTION CLEANERS

Aid to Transport and Industrial Efficiency

UNIQUE DESIGN OF NEW WELBECK MACHINES

DUST and litter of some form or another seem to be inseparable from many industrial and commercial activities and although the worst of these can be, and in modern plants often are, removed at the source by built-in extraction equipment, some dirt inevitably escapes into the atmosphere while other by-products of industrial processes are impossible to trap automatically without the aid of suction. This dirt augments the dust carried into buildings by air currents and on shoes, to form deposits on floors, walls, ledges, machinery and other fittings. Similarly, the interiors of most types of transport vehicles rapidly collect a fair measure of dirt and dust which, if not regularly removed, can make travelling most unpleasant when it becomes airborne due to the motion of the vehicle. Such detritus is not only unpleasant and unsightly; it can be injurious to

Typical of its use in transport vehicles, a New Welbeck Simplex machine removing dust from coach seat upholstery

health and damaging to machinery, paintwork and other surface finishes. Thus dusty and littered surroundings can seriously lower production efficiency due to effects on workers' health and morale and serviceability of machines.

Most industrial and commercial concerns and transport operators are now aware of these effects and take steps to keep premises and vehicles clean but many are still content to rely on broom and shovel methods, which get rid of the more solid rubbish and merely disturb the dust to resettle elsewhere, despite the numerous means to efficient industrial cleaning now available. The majority of modern cleaning machines rely on some form of air suction pump, similar in basic principle to the domestic "vacuum" cleaner, which is the only means of completely removing the dust as well as the larger more solid particles of rubbish. The suction motor and pump form the basis of large static dust and fume extraction plant, are an essential part of the powered mobile sweeping machines if they are to be efficient, and of course are the heart of portable suction cleaners.

Portable Suction Cleaners

Most versatile of the cleaning aids is undoubtedly the portable suction cleaner, which is usually supplied with extension hoses and all necessary fittings and accessories for removing most kinds of rubbish and for getting into even the most inaccessible places. To be efficient, such a cleaner must have a steady and continuous suction capacity capable of dealing with a wide variety of types of rubbish and a generous storage capacity to avoid the need for too frequent emptying; it should be light and easily manoeuvrable, robustly built and able to operate for long periods without attention and reasonably quiet and smooth in operation.

While the larger sizes of the ordinary domestic type of suction cleaner fulfil some of these requirements, they usually fall short in others. This type of cleaner is generally equipped with a bag for collecting the dust and litter and of the two types in general use, that using an external dust bag draws all the rubbish past the suction mechanism before trapping it in the bag, with obvious detrimental effects. Although the type using an internal dust bag does not have this defect, rubbish being trapped inside the bag before the air passes over the suction motor, both types suffer a gradual falling off in efficiency as the inside of the bag becomes coated with dust and dirt.

A New Approach

Celebrating its silver jubilee this year is a company which specialises in the design and production of industrial suction cleaners, New Welbeck, Limited, Moulsecoomb Way, Brighton, Sussex. The firm was founded 25 years ago by Mr. L. F. McCardle, its present chairman and managing director, who had already gained wide experience of the suction cleaner industry in this country and America. He recognised the shortcomings for industrial and commercial purposes of the machines then in general production. Mr. McCardle made a new approach to the whole problem and designed a machine which overcame the shortcomings of the principle of the machines previously produced. The New Welbeck principle dispensed with a dust bag and substituted a metal container, which not only provided greater capacity but was more efficient, more hygienic and easier to empty.

It also incorporated a filter which permitted the maximum air flow and the air path through the container was planned so that most dust and dirt would already be removed by gravity from the air before it passed through the filter. In addition, the power unit was so mounted that the end thrust caused by switching on and off and by changes of load produced a mechanical tapping on the filter, to dislodge lighter particles of dust that had adhered to the suction side. Thus, the suction unit was completely protected from the effects of dust.

The design proved successful and though there have been detail changes and improvements over the years and extensions to the range and scope of the equipment produced, the same basic principle is still used in every New Welbeck suction cleaner which is known as the Master Cleaner. Originally, B.T.H. electric motors were fitted but the company has been making its own motors for many years and these are unit-mounted with a powerful two-stage turbine, the complete unit being quickly removable from the machine, into which it is normally clipped in a sprung mounting. Motors are made for operation on all standard a.c. and d.c. mains supplies and can be supplied on request to suit any voltage including down to 24 volts for independent battery operation. Irrespective of the size of the equipment, one standard size of power unit is used throughout the range, additional power being obtained in the larger machines by the use of two or more units, thus reducing production costs and simplifying maintenance and spares supply. A useful feature is that the detachable power unit is light in weight and can be used as a blower or spraying unit.

Mobility and Versatility

The current range of New Welbeck cleaners has been planned to provide maximum mobility and versatility. It includes Simplex (single-motor), Duplex (two-motor) and Triplex (three-motor) standard designs, each of which is available in various container sizes, mounted on three-wheel trolleys. Standard hose with Simplex machines is 1¼ in. bore by 9 ft. length and additional lengths can be coupled without loss of efficiency, providing a really useful range without moving the machine. This is obviously particularly useful in transport vehicles and in workshops and stores where machines and fittings are closely spaced. Duplex and Triplex cleaners have 1¼ in. bore by 10 ft. long hoses and with both of these machines, two operators can work simultaneously. All New Welbeck cleaners are supplied with comprehensive accessories, which include a 30-ft. electrical lead, extension tubes, angle pieces, blowing attachment and various nozzles and brushes.

A recent addition to the company's range is the Bak-Vak, a compact lightweight cleaner weighing under 18 lb., with a back-fitting harness and finger-tip control designed to provide maximum safety for the operator when removing dust from high and inaccessible places. The Bak-Vak is also supplied with a comprehensive set of cleaning accessories and a 6-ft. standard hose with two 19-in. extension tubes. It has the advantage of using the standard suction motor, so that users of trolley-mounted New Welbeck machines can transfer a motor unit from a Duplex or Triplex cleaner to the Bak-Vak for its limited periods of usage. The standard machine can then continue in use on its remaining motor(s), the borrowed motor orifice being sealed

A Duplex cleaner in use at the Derby works of Rolls-Royce, Limited

by a blanking plate provided. A Duplex-Bak-Vak combination set is marketed by the company.

Another recent introduction is the Floor Master cleaner, which again employs two or three of the detachable twin-turbine power units and the no-dust-bag principle. This machine has a large dirt capacity and is mounted on a freely manoeuvrable three-wheeled trolley fitted with convenient handles. Its principal feature is a detachable large-bore tube and wide nozzle at the front capable of picking up dust and other litter as the machine is guided over the floor.

Commercial Growth

New Welbeck, Limited, is an excellent example of a business founded and successfully developed by an engineer with singleness of purpose and enthusiasm for an idea which he knew to have advantages over contemporary designs. From the small premises in London where work started in 1933, the New Welbeck Model M commercial suction cleaner, which is still in production, obtained recognition and established itself as an essential tool in commercial premises and transport vehicles. Expansion of business eventually made additional production capacity necessary and a move to larger premises at Luton, Beds, was made early in the war years. Increasing demand after the war ended led to a further move in 1956, this time to the present premises, an ultra-modern factory at Moulsecoomb Way, Brighton, where plans are already being made to build factory No. 2 on an adjacent site.

Just as the product was different from contemporary designs, so have the company's sales promotion methods varied from the conventional. The general policy has been based not on what the machine is but what it does and New Welbeck salesmen assume more the role of consultants who can be called in to make an inspection of cleaning problems before a recommendation as to the type of equipment best suited to dealing with them is made. This policy has generally served the company well and such undertakings as the airways corporations, Admiralty, B.B.C., British Railways, G.P.O., L.C.C. and London Transport as well as many internationally known commercial concerns are numbered among its users.

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Two Hundred Years of Railway Legislation

(*Continued from page 5*)

their control, makes rather pathetic reading. The London, Chatham and Dover Company was particularly noteworthy in this respect, and the preambles to its Acts of 1867, 1869 and 1871 are a long and sorry story of a railway which, to quote the first-mentioned Act, is "over 100 miles long and in 1860 conveyed nearly 11 million passengers and upwards of 400,000 tons of goods."

Some of its leases and working agreements were invalid and numerous proceedings were pending in the Court of Chancery; debenture interest and "other claims which are large and constantly increasing" had compelled the company to assign its rolling stock and other chattels to trustees. The 1869 Act refers to a contract by Neilson and Company, Glasgow, to supply 14 locomotives at £46,900 and the firm's refusal to deliver nine of these "by reason of the embarrassed state of the company's affairs."

The Hard-Headed North

Similar embarrassments, on a relatively smaller scale, affected other companies; it may be noted that, with the exception of the Caledonian which ran into trouble twice during the first 40 years of its existence, these were nearly all south of a line from the Mersey to the Wash. Apparently they managed things rather better in the North and in Scotland. The preamble to the Northampton and Banbury Junction Act, 1870, shows that this small company owed no less than £95,000 and, by order of the Court of Chancery, was compelled to allow some of its land, over which its railway was already publicly opened, to be sold by auction. This accumulation of debt was easily surpassed by its later associate, the East and West Junction, whose 1901 Act detailed no less than £1,490,000 owing to creditors.

The recently improved standard of accuracy in writing railway history, especially where dates are concerned, has been in part engendered by a closer study of the Acts. It is no longer assumed, for instance, that amalgamation, vesting or leasing necessarily took place from the date of the authorising Act. In the majority of such cases the act stipulates the effective date, even if this is sometimes rather obscurely worded. The Swansea and Neath and Vale of Neath were amalgamated from August 5, 1863 ("the fourth Wednesday next" after the passing of the Act) and the North Union was leased to the Grand Junction and Manchester and Leeds from August 28, 1846, "the last day of the present session," not January 1, as usually quoted.

Entanglements

Acts are an invaluable, perhaps the best primary, source of information on the many complications which arose through inter-company entanglements, where a number of companies were closely related within a small area, or in the many instances where the affairs of two companies became inextricably mixed up for various reasons. A study of the relevant Acts will do much to clear the air, if not to solve the whole problem. The extremely close tie-up in the financial arrangements between the L. and N.W. and Birmingham, Wolverhampton and Stour Valley companies on the one hand, and the Birmingham Canal Navigations and Shropshire Union Railways and Canal Companies on the other, one of the more involved inter-company relationships, can readily be understood by careful reading of the Acts.

Construction of the line between Cheltenham and Gloucester, the rather peculiar powers and division of financial responsibility between the Cheltenham and G.W. Union and Birmingham and Gloucester Companies, has often been over-simplified in historical writings, even to the point of error as to what took place, yet the Acts, read in chronological sequence, give a very clear picture. No less involved was the problem of gauges in South Wales. Here the main line was broad gauge and nearly all connecting lines, chiefly owned by independent companies, were necessarily also broad. Where "mixed" broad and narrow gauge was laid compulsorily under statutory obligation the small companies objected to bearing the expense, likewise the cost of conversion to narrow gauge when the main line was altered. The ramifications of payments, cross-payments and penalties is a fascinating study through the many Acts concerned.

Fusion

Historically it is important to be sure of the steps actually taken in law to effect the fusion of two or more companies; to the student of railway finance this is vital. Many published statements show all too clearly that some authors have not consulted the Acts and are hazy as to what took place. The London and Brighton and London and Croydon were not amalgamated as the L.B. and S.C. Railway. Under the Act of July 27, 1846, the two former were dissolved and their undertakings vested in the new company incorporated by the same Act. The York and Newcastle and Newcastle and Berwick are often misquoted as amalgamating in 1847 to form the York, Newcastle and Berwick. In fact, the Y. and N. merely changed its name to Y.N. and B. and absorbed the Newcastle and Berwick; its name was changed again in 1850 to North Eastern Railway when it absorbed the Leeds Northern.

Incorrect Names

Some curious transpositions and distortions of company names have taken place and more than one company has used an incorrect style on its seal and in documents. The London and Southwestern (as incorporated) persistently used the abbreviation "South Western" and had to insert a section in one of its acts to dispose of some legal quibbles. The Kenyon and Leigh Junction is frequently referred to as the Leigh and Kenyon whilst the Furness Railway, unlike the legitimately plural East Anglian Railways and Cambrian Railways, dubbed itself "Furness Railways" on its trespass warning and bridge restriction notice boards.

Except in a few straightforward cases, the setting up of joint line undertakings usually has some interesting and often complicated, historical background. The first statutory joint committee was set up by Act of July 4, 1843, to manage the South Eastern's Bricklayers' Arms branch; the other partner was the London and Croydon. Altogether, about 38 such committees have been set up, but not all had the status of incorporated companies; the Midland and Great Northern Railways Joint Committee dated from 1867 but was not incorporated until 1893. The preambles to the Ashby and Nuneaton Joint Line Act 1867 and Norfolk and Suffolk Joint Railway Act, 1898, are excellent examples illustrating the reasons behind a joint organisation and how it was set up.

Newcastle became a joint station by Act of July 31, 1845, and was the first instance of such an organisation. It was followed by Carlisle in 1846; Hereford, Chester and London Bridge in 1847; Shrewsbury, 1849; Preston, 1850; Perth, 1859; Bristol, 1865; and Nottingham Victoria, 1897, to name the principal ones only. Others were legislated for but not set up.

Protective Clauses

There are few Acts which do not include sections inserted for the protection of someone or some body against same injury, real or imaginary. The more usual ones concern non-interference with water, gas, electricity, drainage and Post Office undertakings; many protect canals and other railways from damage to their property and interruption of services. The Dundee and Arbroath was required by its Act of June 18, 1842, not to allow smoke to interfere with communication between Bell Rock lighthouse and the shore; the Aberdeen Railways had to shade all stationary lights near the coast, although the South Devon was not similarly restricted.

A wide variety of sections cover what may be called "preservation of amenities," both public and private. The Great Northern Act, 1846, stipulated that the architecture of York station should be "in keeping with the ancient city." Similar provisions applied at Bristol, Leeds, Windsor and Wareham. The Llanelly Railway's powers for its Carmarthen branch were suspended for a year to enable the parties "to settle whether the line shall pass in front of or behind the Abergwili Palace of the Bishop of St. David's." The Furness Company was required to construct part of the Arnside—Hincaster Junction line on arches or pillars to avoid obstructing the view from Dallam Tower, whilst the North British, in erecting a signalbox in Princes Gardens, Edinburgh, was confined to an exactly specified site and dimensions, with the added restrictions that there should be no outside stairs and that the stove should burn only smokeless coal! Bathers at Eton College (Cuckoo Weir) and on Ramsgate Sands, as well as the inmates of the New Bailey Prison, Salford, were also "protected" in appropriate ways.

Unnecessary Works

Many expensive works were forced on the railways by landowners and others as the price for withdrawal of opposition to their Bills in Parliament. The South Eastern's Bill in 1870 for a shorter and cheaper line between Greenwich and Woolwich was withdrawn when the Admiralty objected to possible injury to Greenwich Observatory. As passed in 1871, it provided for experiments to be carried out at railway expense before construction work was started. In making alterations at Shrewsbury in 1895 the G.W. was required to underpin the prison walls and submit to expert vibration tests made by the Astronomer Royal.

Provision for compulsory artificial tunnels or covered ways, as originally provided at Cane Hill near Coulsdon and existing at Newmarket, are not as numerous as might be expected. A few such cases as at Haddon, were no doubt agreed direct with the landowners and do not appear in the Acts. Of a total of 38, only seven were actually made; the greatest lovers of this form of "amenity protection" seem to have been the Earl of Derby and the Earl of Sefton, through whose estates several lines near Liverpool were authorised.

Statutory Stations

In order to obtain the consent of some landowners and the support of local people of influence, a number of companies agreed to insert in their Bills sections making it an obligation to provide public stations at certain places. (The author is not aware of any purely private station built under statutory powers.) About 60 "statutory stations" were erected. There were usually some further conditions attached, e.g. that a certain number of trains should call or that it should be "for ever after maintained." The first "statutory station" was Fay Gate (1845) and Charfield, Charwelton, Eridge, Wendover, Wickwar and Woolston are among those required to be kept open in perpetuity; a number of others is now closed. In at least two cases, the act specified the name by which the station should be known.

Landowners were also in a strong position to compel the companies to make occupation level crossings, overbridges or subways connecting their properties which were to be severed by the railway, to provide rabbit-proof fences according to exact specifications and to plant embankments with trees or shrubs of named varieties and keep them cut to a particular height. Many of these occupation works were little used and seemingly unnecessary. Two overbridges on the former Bristol and Exeter Railway near Bristol were removed in 1931, neither having been used for at least 70 years; one was completely isolated by housing estates built over the fields which it originally connected and both were massively built in stone to last for ever.

Level Crossings

The various highway authorities insisted upon every major, and many minor, level crossings being provided with a gate house and keeper. This later became a permanent feature as a result of Public General legislation. Nearly all these works were chargeable to capital account and, as invisible burdens, have been borne ever since. It may be noted that recent Acts obtained by the British Transport Commission have authorised improvements in the level crossing position by substitution of semi-automatic apparatus and road traffic lights at certain places. The present need for additional economies will, no doubt, increase the use of this form of protection, especially in Lincolnshire and the eastern counties where level crossings predominate.

In addition to payments for land taken, which included recompense for various forms of loss incurred by the owner or occupier, the Acts frequently required payment of compensation to parties whose income would be reduced by construction of the railway. The first case occurs in the London and Greenwich Act of July 15, 1837, confirming an agreement with the Deptford Creek Bridge Company as to use of the railway bridge by road traffic. Under its Act of July 24, 1851, the Ulverstone and

(*Continued on page 16*)

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CHANGES IN BUS INDUSTRY

Discussions at Harrogate Conference

OPTIMISM NOT QUENCHED

UNQUENCHABLE optimism was a happy undercurrent at the Harrogate conference of the Public Transport Association—13th of the series and presided over by Mr. T. Robert Williams, chairman of the council of the Association. Operators in general are confident in the future role of the bus and coach in social and economic life and that ways will be discovered by which to surmount present difficulties in certain departments of the bus industry.

After a cordial welcome from the Mayor of Harrogate, Councillor Miss Alice Wardle, the business began with the annual general meeting of the Association, which includes 68 company members, 44 municipal, 192 contractors, two extra-ordinary members, seven overseas and two honorary members. The delegates stood in silent tribute to the late Sir Joseph Nall, an honorary member of the P.T.A., whose death was recorded in our issue of May 10; Sir Joseph had played a great part in the merger of the Omnibus Owners Association and the Public Service Transport Association in 1943. The chairman then referred to some of the problems of the past year, after which Messrs. J. Atherton, R. Barr, R. W. Birch, R. J. Ellery, F. W. Hodgkinson, R. C. Moore, H. Orme White and Winston Robinson were re-elected to the council, while Messrs. D. M. Sinclair and W. Leese were elected in place of Messrs. R. G. James and C. Warwick Wroth.

Unprecedented Difficulties

In his review of 1957 Mr. Robert Williams said the year had been one of unprecedented difficulties for operators and the gravity of the situation seemed at last to be making some impression upon the Government. It was interesting to hear Mr. Harold Watkinson, Minister of Transport, so cogently expressing this at the annual banquet in November, when he said: "Bus operators are having a difficult time. Costs are rising and traffic is declining."

P.T.A. CONFERENCE 1959
The conference of the Public Transport Association for 1959 will be held at Folkestone from May 12 to 14

The close of the year 1957 saw the bus industry emerging from the effects of Suez (but still unfortunately carrying the burden of higher fuel costs) and the results of the most lamentable bus strike of July followed by additional cost of the heavy and extraordinary wage award of the Industrial Disputes Tribunal. It was to be hoped that the current year would not see any further increase in costs and that all concerned would realise that stability in that field was essential, not only from a national point of view but also to ensure the continuance of their own jobs. It could not be stated too emphatically that the bus companies had in no sense been passive. Undertakings had made valiant efforts in economies of working, particularly by way of one-man operation, but were now reaching the limit of such contributions to their financial stability.

Rural Service Costs

Cutting of services, especially in rural areas, would become increasingly serious to cope with the recession of passenger traffic which high costs and competitive forms of alternative transport had made inevitable. It was unquestionable that with the existing high level of operating costs, a major contribution to the retention for this country of efficient public road passenger transport services in keeping with their high traditional standards should be made by the Government. It was no solution at all to try to introduce expedients such as utility buses, post office vans or the village carrier.

The remedy was to remove as soon as possible the discriminatory and inequitable fuel tax of 200 per cent on diesel fuel oil—their raw commodity. Ignoring all other forms of taxation which the industry had to bear, fuel tax alone represented something between 10 and 15 per cent of an operator's costs. Traditionally, the rural bus service, running at a heavy loss, had been carried by the urban and interurban services. But today urban and interurban services were similarly, in many cases, running at a loss so that operators were of necessity forced to shed as many unremunerative services as possible. While the cost to the operator was so grievous bus fuel tax represented to the Treasury only £30 million per annum; even that £30 million need not be lost if the Government, instead of singling out and extracting it from the road transport industry, spread it over the other 80 per cent of users who at present paid nothing.

Budget Disappointment

"The Budget of last month was a bitter disappointment to us and peculiar in its logic. Reductions were made in purchase tax on many luxury articles and in entertainment duty, but not one in the tax on the primary commodity—fuel tax—used by public service vehicle operators whose activities are so much in the national interest, nor in the licence fees which it pays. One hopes that in the next Budget reason will prevail."

Having regard to the number of persons it catered for in comparison with other forms of road passenger transport, e.g. cars and motor cycles, the passenger road transport industry was deserving of far greater consideration when restrictions were being considered in relation to the use of roads. In days of heavier traffic density and congestion the bus should have the unhindered right to the main streets and the shopping centres of our towns and cities, and on the open road vehicles with the standard of design and the efficiency and safety of buses and coaches should no longer be tied to an archaic speed limit of 30 m.p.h.

Economy of Road Space

As a road user unit, a double-decked passenger vehicle could carry on 240 sq. ft. of road space, in absolute safety and perfect comfort, a load of some 70 passengers. "Compare this with the road space taken up by two or three private cars carrying one or two passengers apiece, or even by half a dozen motor scooters." Here was an obvious example of the contribution which their vehicles made to the avoidance of traffic congestion on the one hand and the reduction on the other of the mounting toll of road accidents to which some of the lighter types of vehicles were prone.

They noted with regret the issue by the Ministry of Transport of the new Conditions of Fitness Regulations which discriminated unfairly between the utility type of public service vehicles and others. The vehicles of P.T.A. members were required to conform to an exceedingly high degree of fitness, enforced by the most stringent form of examination and certification, but the Minister of Transport had now lowered his standards of fitness to permit the use of 12-seater utility-type vehicles. Apart from their views about the operative value of the particular type of vehicle they thought it wrong in principle and, in any event, it was an expedient which could never solve the problem of rural transport. He concluded with thanks to his vice-chairman and members of council and a warm tribute to the work of Mr. R. L. Howlett, secretary of the P.T.A.

Discussion

In discussing the paper by Mr. J. E. Hollands (summarised in our issue of May 17), Mr. S. C. Vince (B.E.T. Federation) complained that manufacturers tended to lag behind in new developments and were not always helpful to operators. Reluctance to provide disc brakes afforded an example. On the other hand extraordinary advances had been made in maintenance methods in the past seven years. The oil companies had produced improved oils which prolonged the intervals between docks. He suggested that oil cooling might overcome some of the problems associated with air cooling or water cooling. Painting of buses might not be necessary; aluminium or plastics could effect savings. Filler necks might be made more accessible and of better design to avoid frothing.

Mr. A. H. Gernaey (Lancashire United Transport) thought the entry of oil at the lowest part of the sump as suggested by Mr. Hollands was not sound practice in the event of the pipe from the tank to the sump fracturing. Study of vehicle fuel averages could lead to rectifying action being taken to save fuel. Radiator manufacturers could provide a visible gauge to show whether the radiator needed water. He did not think it would be easy or cheap with an air-cooled engine to supply warmth for passengers in the saloon, as could be done with water cooling.

Springs

Mr. N. H. Dean (Yorkshire Traction) said that leaf springs would be with us for years. His chief engineer was convinced that it was wrong to have springs repaired and overhauled. He was sure they should be scrapped and replaced by new ones. This practice had reduced expenditure considerably; in 1956, the first year, it was £4,600, as in 1955, but in 1957 it showed a saving of £1,400, and in the first four months of 1958 a further reduction over 1957 of £430. Mr. T. G. Davies (Western Welsh) gave his company's experiences with a garage where 70 per cent of the vehicles were stored in the open. Through an extremely severe winter there had been no trouble from the point of view of passenger comfort, but it was not perhaps ideal for the whole country; one must take into account climatic conditions and the location of the site. Was there an air-cooled engine which could be installed without detriment to passenger comfort? he asked.

Mr. R. Le Fevre (Halifax Joint Omnibus Committee) stated that on 160 vehicles, his spring changes numbered 450 and he had reached the same conclusion as Mr. Dean, putting in new springs at 100,000 miles. He thought automatic chassis lubrication not so important in the case of the operator whose vehicles were home every night. Automatic lubrication was not all trouble-free and cost £100 to £115 a chassis. Manual greasing might be cheaper. Mr. H. Orme White (Gosport and Fareham) claimed that the air-cooled engine he was using was quieter from the passenger point of view than the average diesel, that its weight was less and all the units were belt-driven. In the long run he thought it would be ideal for transport work; public service in his undertaking was beginning next week and he invited members to go to see it.

The Manufacturer's View

Mr. F. G. Parnell (Automotive Products) thought what suited Germany did not necessarily suit England. General Motors, too, had spent large sums on an air-cooled engine, but it did not survive. It was one thing to try out a thing experimentally, and another to push it round to the whole, very critical, industry. For example, some operators swore *by* automatic brake adjustment and some swore *at* it. He quoted a Continental friend who recommended idling all night to keep buses warm!

Mr. J. O. Bowley (A.E.C.) said a lot of work had been done on air-cooling developments; the Americans had had in mind global warefare under extreme conditions of temperature. The disadvantages of noise and reduced efficiency through the power absorbed by the fan and ducting made the experiment doubtful commercially. He thought conventional springs gave something in design which air suspension did not do in locating the axle both laterally and horizontally and taking care of torque reaction. An air suspension vehicle was therefore heavier. The first essential in development was to know the lines on which you were to develop; operators had diverse ideas. Manufacturers had operators' interests well in mind and would ask operators to come to them with a common voice rather than many dissentient voices.

Mr. R. S. Crouch of Transport Vehicles (Daimler) agreed that there were advantages in air-cooled engines but disadvantages were noise, providing power for the fan and possibly the cooling of the oil. New ideas cost money and it was disappointing that manufacturers did not get support and that operators so often made decisions based on the first cost of the vehicle. He hoped there would be a reliable automatic brake adjuster shortly. Air suspension meant complications and other, more suitable, systems deserved consideration.

Mr. H. N. Tuff (West Yorkshire) said the paper described a future where nobody did anything and there was nothing to do. Using up the idle time of bus crews might represent savings. Drivers (newcomers) standing spare worked on vacuum cleaning in the off-peak as the job was no longer a dirty one. He wondered if the speaker had reflected on the difficulties of taking heat, with an air-cooled engine, to the passengers, an important selling point in bus travel.

(*Continued on page 16*)

BRIGHTON COACH RALLY 1958

The 'Reliance' Rally Winner is driven away with the Brighton Corporation Trophy held aloft and its three other trophies prominently displayed against the windscreen.

THE A.E.C 'RELIANCE'

Wins against all comers and gains 13 more awards

Overall winner of the Brighton Corporation Trophy for the highest marks in road section, driving tests and Concours d'Elegance was an A.E.C. 'Reliance' with Plaxton luxury body—driver Mr. A. Wilson — entered by Sheffield United Tours Ltd.

With a total of 14 successes, including a further three in the road section and driving test, 77 per cent of the A.E.C. 'Reliance' coaches entered in the Rally gained awards—providing further evidence that the 'Reliance' is Britain's most successful single-decker.

AEC SOUTHALL

A.C.V. SALES LIMITED, 49 Berkeley Square, London, W.1

THE A.C.V. GROUP OF COMPANIES INCLUDES A.E.C. AND THE MAUDSLAY MOTOR CO.

CV/450

RIGIDITY...

the essence of good design in driving axles

This is the essence of good design in driving axles. In Salisbury axles the hypoid pinion and gear with differential case assembly are mounted directly in a rigid malleable cast iron carrier. The axle tubes are pressed and plug welded into this carrier. This construction permits the location of reinforcing ribs to the best advantage resulting in minimum deflection at the mesh point of the gear teeth. Excellent support is provided by the ribs extending from the pinion nose to the differential bearings which are located by abutment faces integral with the main carrier casting. The rigid mounting of these main components produces inherently quiet and trouble-free axles.

SALISBURY hypoid AXLES

Designed and manufactured by—
SALISBURY TRANSMISSION LTD
Birch Road, Witton, Birmingham 6

MEMBER OF THE Birfield Group

SALISBURY TRANSMISSION LTD. shares in the joint technical, research and productive resources of more than 20 famous firms, such as Laycock Engineering Ltd., Forgings and Presswork Ltd., Hardy Spicer Ltd., The Phosphor Bronze Co. Ltd., and others, who constitute the Birfield Group of companies.

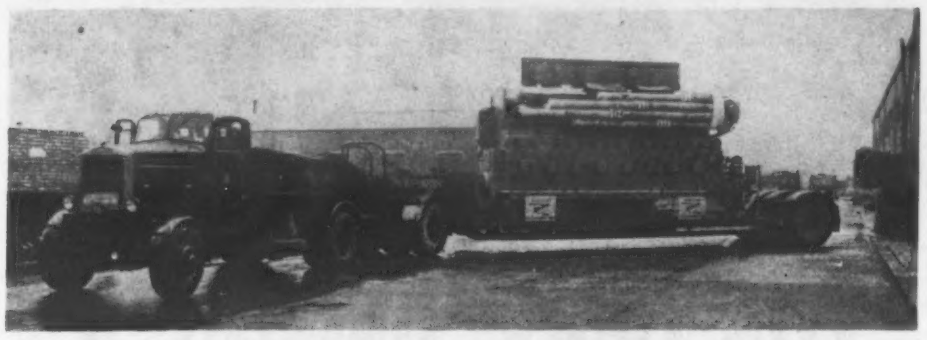
ENGINE MAKER'S JUBILEE

Fifty Years of Diesel Design

COMMEMORATIVE BOOKLET BY MIRRLEES, BICKERTON AND DAY

ENTITLED *Fifty Years of Diesel Progress*, a booklet produced at the end of last year by Mirrlees, Bickerton and Day, Limited, Hazel Grove, Cheshire, traces the history of the company since it built the first compression-ignition engine to the design of Dr. Rudolf Diesel to be made in this country in 1897. The diesel engine as a commercial proposition is little more than 50 years old and the privilege of having been associated with its inception and contributed to its early development is held by but a very few engineering companies.

Although celebrating its golden jubilee of diesel engine building, Mirrlees, Bickerton and Day can trace its origins back as far as 1840, when the three brothers McOnie founded an engineering company, P. and W. McOnie, to produce sugar cane machinery. The firm was joined in 1848 by Mr. J. B. Mirrlees as a partner, whereafter there were several changes of title before the present company was formed in 1907. A few years before the turn of the century, the company investigated Dr. Diesel's design patents and in March, 1897, acquired an exclusive licence to manufacture and sell Diesel engines in Great Britain.



A Mirrlees KSSDM8 marine propulsion engine of about 2,000 b.h.p. leaving the Hazel Grove works for installation in M.T. " Loch Melfort "

Successful Introduction

Within a few months, the first engine was built and after extensive testing by Professor Wilkinson of the Royal Technical College, Glasgow, it was put into regular service at the company's works. This engine, a single-cylinder unit with a 300-mm. bore and 460-mm. stroke which developed 20 b.h.p. at 200 r.p.m., was only the third engine of Diesel's design to be built in the world, and formed the basis of the first range of Mirrlees diesel engines. Its place in history is recognised and it can now be seen in the Science Museum at South Kensington.

The year 1903, three years after Mr. Charles Day joined the company as manager, saw the first commercial success with the engine, with an order from the Admiralty for two four-cylinder 160-h.p. engines for installation in the battleship H.M.S. *Dreadnought*. This was the first British warship to be so equipped and was the forerunner of many more units installed in H.M. ships for auxiliary purposes. Admiralty interest stimulated development and in 1906 Mirrlees designed a lightweight four-cylinder engine for the Admiralty, developing 120 b.h.p. at 400 r.p.m. and intended for pinnace propulsion.

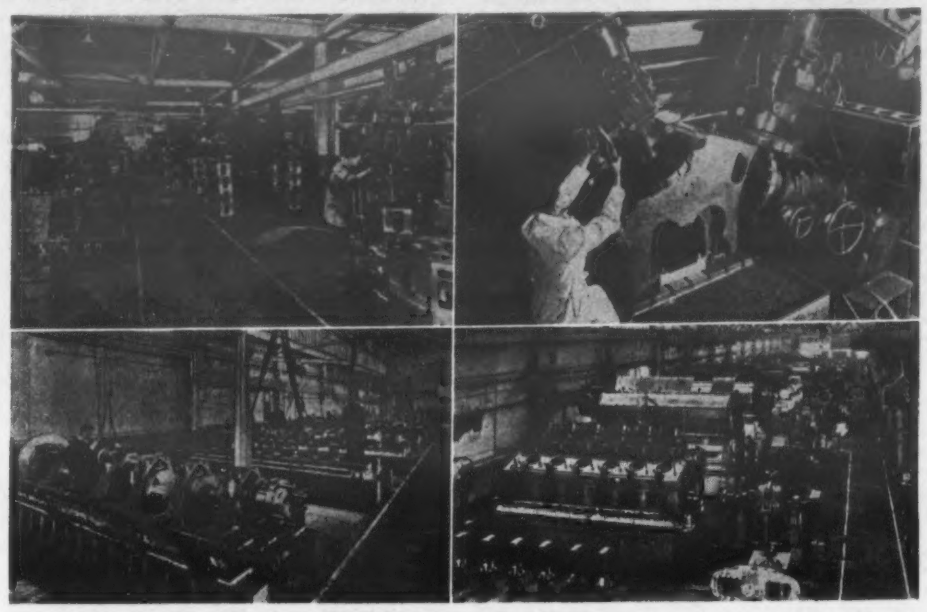
The present company was formed in 1907 by Mr. J. B. Mirrlees, Mr. N. H. Bickerton (of the National Gas and Oil Engine Co., Limited) and Mr. Charles Day, and the first engine factory came into operation on the present site at Hazel Grove, Stockport, in August, 1908, for the production of a range of diesel engines from 50 to 750 b.h.p. Industrial as well as marine applications began to interest Mirrlees engineers and in the ensuing four years a number of designs with various cylinder sizes and outputs was introduced. At about this time, too, the world's first diesel-electric marine propulsion machinery was developed, incorporating alternators driven by Mirrlees diesel engines. In 1912, the major patent granted to Dr. Diesel expired and the field was opened to many new companies, but the commanding lead established by Mirrlees, Bickerton and Day ensured the company's position in the following period of rapid development.

Wartime Activities

The years of the 1914-18 war brought their own particular problems and the works at Hazel Grove produced a number of six-cylinder 750-h.p. petrol engines for powering the new tanks as well as diesel engines. Fuel conservation was vital and research was devoted to the use of home-produced tar oil in liquid-fuel engines. Mirrlees developed a pilot injection system whereby a small quantity of normal diesel fuel was introduced into the combustion chamber just before the main injection of tar oil, thus alleviating the effects of the poor ignition characteristics of the tar oil. Other important design features introduced by Mirrlees during these years included electrical and mechanical devices for controlling air-blast injection pressures in accordance with the load on the engine; the floating-type gudgeon pin, now in almost universal use; and the first alignment indicator for accurately lining up engine crankshafts.

Crosshead Types

The early 1920s saw the production of the first Mirrlees crosshead-type diesel engine, a unit with watercooled pistons and 21½-in. bore by 24-in. stroke producing 166 b.h.p. at 200 r.p.m. A low-compression two-stroke semi-diesel with hot-bulb starting was introduced as the Simplex engine in 1924. This differed from contemporary engines of similar general type in that it was a single-acting crosshead two-stroke which utilised the varying volume between the crosshead guides and the underside of the piston as a scavenge pump, thus avoiding the common disadvantages of crankcase-compression scavenge types. With a bore of 12 in. and a stroke of 13 in. rated at 40 b.h.p. per cylinder, the Simplex was subsequently redesigned as a high-compression cold-starting diesel engine. In 1925 the company concluded a licence agreement for the production of the Nobel two-stroke design, with cylinder dimensions of 22 in. by 30 in. and oil-cooled pistons. The Nobel engine originally used air compressors driven by rocker arms but these were subsequently replaced by crankshaft-driven units.



In the Mirrlees, Bickerton and Day Hazel Grove, Cheshire, factory: machining cylinder heads, the cutting heads of a plano-miller; below, assembly of K-type bedplates and, right, final assembly and testing of V-12 K-type engines

Turbocharging

The next 10 years or so saw the development of totally enclosed designs, a gradual change from air-blast to solid injection and a trend towards higher rotational speeds, with consequent greater specific power. By 1927 a Mirrlees engine of 8¼-in. bore and 12-in. stroke was running at 450 r.p.m. and was later developed to 600 r.p.m., at which speed it had an output of 33 b.h.p. per cylinder. About 1930, two engines were designed using the Ricardo sleeve valve, one running at the then very high speed of 1,200 r.p.m. and the other at 900 r.p.m. Another Ricardo patent, the Comet head combustion chamber, was used by Mirrlees in 1934 and this design with 8-in. by 12-in. cylinders was rated at 60 b.h.p. per cylinder at 900 r.p.m.

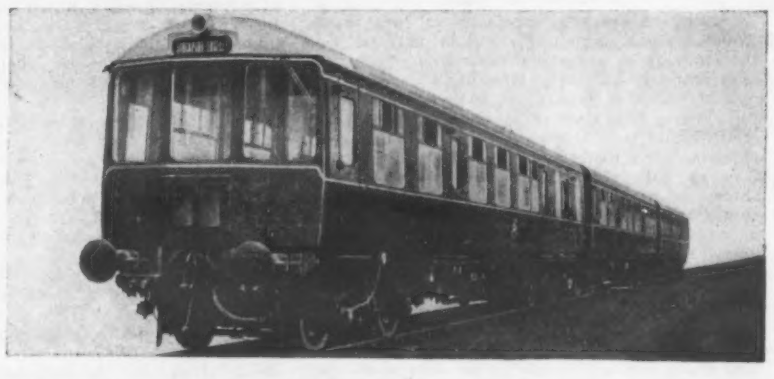
This design was followed by the well-known HF range in 1938, which continued in general production until quite recently and is still specially built to meet repeat orders that continue to be received by the company. The HF range was available with up to eight cylinders with a rating of 110 b.h.p. per cylinder and it was this range that marked the first large-scale commercial application of exhaust-gas turbocharging, in which form the engine developed 165 b.h.p. per cylinder.

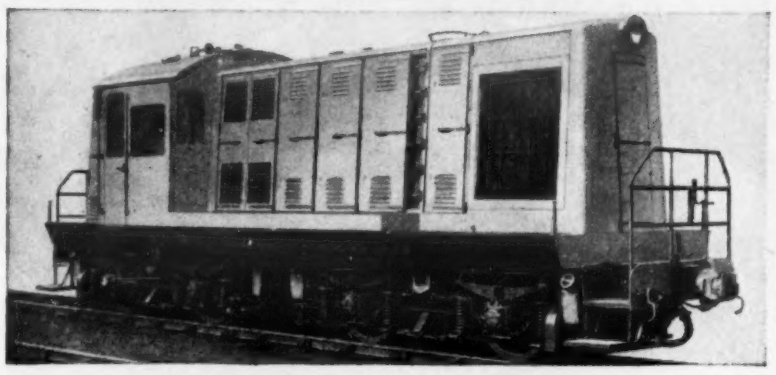
The 1939-45 war again saw the Hazel Grove plant fully occupied with military production and some 400 engines for various power requirements of the fighting services were built during this period. But war work did not interrupt design development and in 1942 the Mark I TL range

(*Continued on page* 14)

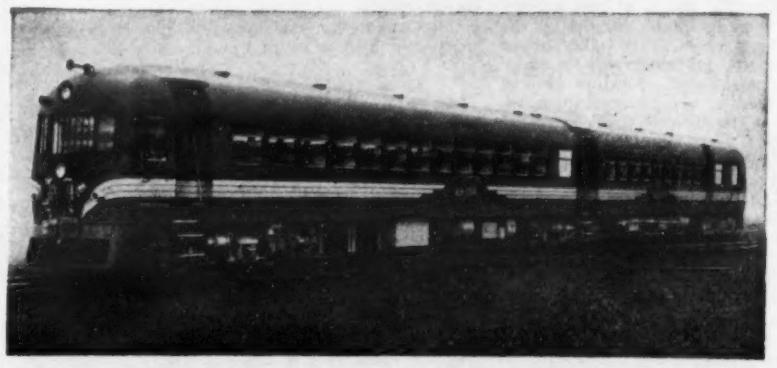
COMMONWEALTH RAILWAYS OF AUSTRALIA
955 H.P. Diesel-Electric Locomotive (10 Ton Axle Load)
In collaboration with Sulzer Bros. (London) Ltd. and Crompton Parkinson Ltd.

BRITISH RAILWAYS
Three Unit Diesel Mechanical Railcars

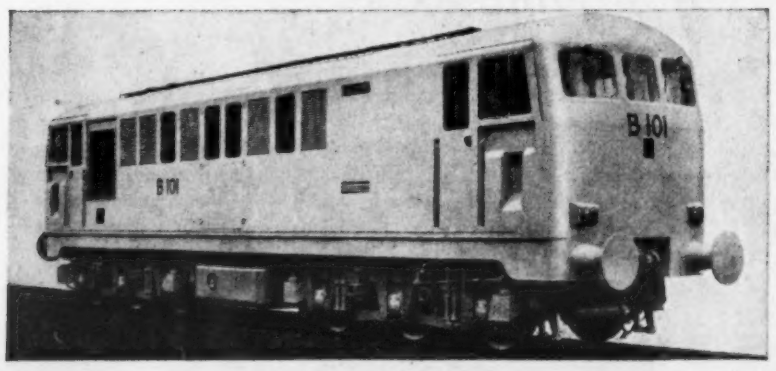




GHANA RAILWAYS
400 h.p. Diesel Electric Locomotive

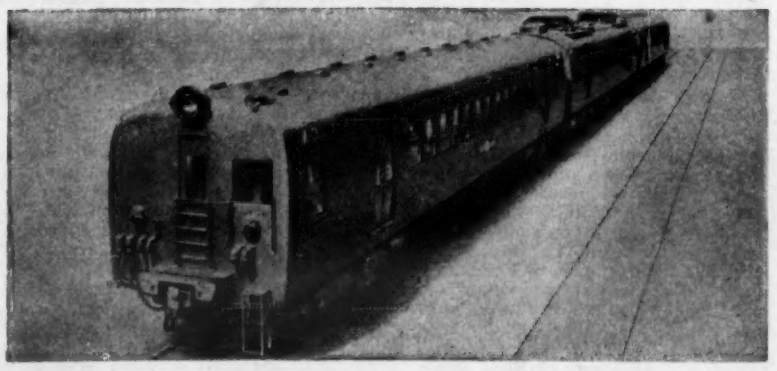


NEW ZEALAND GOVERNMENT RAILWAYS
Twin Articulated Diesel Mechanical Railcars
In collaboration with The Drewry Car Co. Ltd.



CORAS IOMPAIR EIREANN RAILWAYS
960 h.p. Diesel Electric Locomotive

SANTOS JUNDIAI RAILWAY, BRAZIL
3,000 Volts, 800 H.P. Three Car Train
In collaboration with The English Electric Co. Ltd.



THE BIRMINGHAM RAILWAY CARRIAGE & WAGON CO. LTD
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TELEGRAMS 'CARRIAGE SMETHWICK

BRITISH BUSES IN ISRAEL

Daimler Freelines with Dan and Egged

TWO Israeli passenger vehicle operators, Dan Bus Co-operative, and Egged Bus Co-operative, both of Tel Aviv, have each recently put into service 10 Daimler Freeline buses, which were supplied through the Daimler distributor in Israel, Moise Carasso and Sons, Limited. Although the Egged vehicles are coaches on 20 ft. 4 in. wheelbase operated on long-distance tours and the Dan vehicles are high-capacity urban buses on 17 ft. 6 in. wheelbase, apart from the use of five-speed gearboxes on the coaches and four-speed units on the buses, the chassis specifications are identical.

The Egged Co-operative Daimler Freeline chassis, with 20 ft. 4 in. wheelbase, have Ha'argas de luxe coachwork with 43 individual seats and a folding courier's seat in the gangway

The chassis are powered by the Daimler 10.6-litre D650 H underfloor diesel engine driving through a preselective epicyclic gearbox with air-pressure-assisted gearchange. The brakes are compressed-air operated and embody automatic adjusters and the steering is air-pressure assisted and arranged on the left-hand side. To counteract the dusty conditions in Israel, breathers from the engine gearbox, rear axle and so on are all piped to a large-capacity oil bath air cleaner, which itself breathes through a centrifugal cleaner. A centrifugal oil filter is also fitted in addition to the usual filter. For satisfactory operation at very high ambient temperatures, an extra radiator header tank and high-speed water pump are provided and the whole cooling system has been rendered corrosion resistant.

The Egged Co-operative coaches have been bodied by Ha'argas, Limited, Tel Aviv. They have 43 individual de luxe seats, each having a rack for books, handbag or packets fitted ahead of it. The roof glasses and tops of the side windows are tinted and each window has a pull-down blind. The two doors, at the front and centre of the right-hand side, are air-pressure operated. The driver's seat has a basket-work backrest for coolness and at the front in the gangway there are an icebox and a courier's folding seat.

The coaches operate from Tel Aviv on long-distance tours to Haifa, 60 miles to the north, Jerusalem, 40 miles to the east, and southwards to Eilat at the top of the Red Sea. This last-mentioned journey is over 200 miles during which the Negev desert is crossed, the whole journey taking six hours. During the summer months, the vehicles operate in temperatures of up to 120 deg. F.

The Dan Co-operative buses have 32-seat bodies built by Merkavim Metal Works, Limited, Tel Aviv. They have a pay-as-you-enter cash desk equipped with a cinema-type ticket-issuing machine. There are three air-operated folding doors the rearmost one being the entrance and the middle one the exit. The other door is for the use of V.I.P.s, transport workers and others who are permitted to travel free. The buses are being used on city work in Tel Aviv, where most of the roads are narrow and congested. They are operated on the busiest routes where loads of up to 90 passengers are usual.

The 10 Dan Co-operative buses comprise Merkavim Metal Works bodies on 17 ft. 6 in. Freeline chassis; they have p.a.y.e. desks with ticket-issuing machines and carry up to 90 passengers, 32 on shaped plywood seats

Plymouth Bus Station

UNDER VIADUCT AT BRETON SIDE

THE new bus station at Breton Side, Plymouth, was brought into use without ceremony on Sunday, March 30, when a number of former Western National bus routes within the Plymouth joint services area was also renumbered.

The bus station lies below the new Exeter Street viaduct slightly to the south-east of St. Andrews roundabout (the prewar bus stand was at St. Andrews Cross). The new station can be entered by pedestrians by subways at each end of the new viaduct. These give access to a large covered circulating area looking out over the bus loading platform which is placed at a still lower level. From east to west are situated public lavatories, public restaurant (the only one apparently open on Sundays in Plymouth), separate offices for the various concerns operating into the station, staff canteen and staff lavatories.

Buses enter from the west end of Breton Side to set down at a common point, in the open. They then proceed to the various picking-up points along the loading platform, nearly all of which are covered. The exception is the Heybrook Bay group, buses of which pick up in the middle of the yard. The yard is divided off from the loading area merely by some white lines which provide a diagonal park for long-distance coaches. Buses out of service park diagonally at the south side of the yard between the entrance and exit, Corporation vehicles to the west, W.N.O.C. to the east. The loading points are grouped by roads leading out of Plymouth, Laira (Plympton), Crownhill (Yelverton) and St. Budeaux, with the most easterly extremity reserved for long-distance coach services.

Flexibility is the keynote as all notices are on poles set in movable concrete bases. There are no queue rails, which since 1942 have become so popular with many operators. A feature of the station is the way the longer distance Western and Southern National buses (for example, to Bideford and Bude) share the same group stand, Crown Hill, as the local regular interval Plymouth Joint Services routes, some of which have been diverted into the bus station for the first time. All routes using the bus station terminate there, with the exception of P.J.S. routes 43 and 44, and W.N.O.C. routes 92 and 92A to Bigbury-on-Sea and 93 to Dartmouth, which sensibly continue to start from North Road Railway Station, as they have done since the days when they were railway operated. P.J.S. service 22 passes down Breton Side and stops between the entrance and exit.

Companies whose stage carriage services use the station besides Plymouth Corporation and Western National include Heybrook Bay Motor Services, Limited, from Heybrook Bay; Southern National from Delabole, and on joint W.N.O.C. services, and Devon General vehicles from Exeter and Torquay on the joint W.N.O.C. routes from these towns. A magnificent view of the station is obtained from the Exeter Street viaduct and the whole station is in keeping with the rebuilt city.

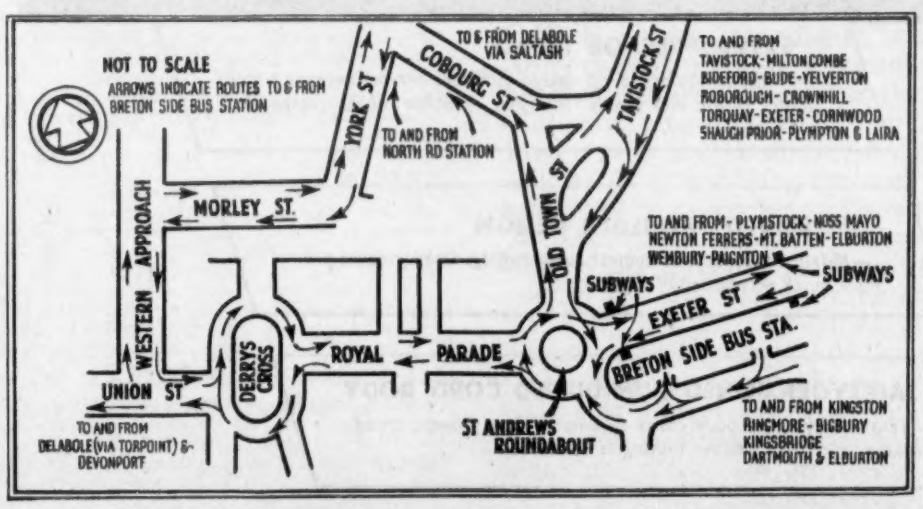

NOT TO SCALE
ARROWS INDICATE ROUTES TO & FROM BRETON SIDE BUS STATION
TO & FROM DELABOLE VIA SALTASH
COBOURG ST
YORK ST
TAVISTOCK ST
TO AND FROM NORTH RD STATION
TO AND FROM TAVISTOCK-MILTON COMBE BIDEFORD-BUDE-YELVERTON ROBOROUGH-CROWNHILL TORQUAY-EXETER-CORNWOOD SHAUGH PRIOR-PLYMPTON & LAIRA
MORLEY ST.
OLD TOWN ST
TO AND FROM-PLYMSTOCK-NOSS MAYO NEWTON FERRERS-MT. BATTEN-ELBURTON WEMBURY-PAIGNTON
SUBWAYS
SUBWAYS
EXETER ST
WESTERN APPROACH
DERRYS CROSS
ROYAL
PARADE
BRETON SIDE BUS STA.
UNION ST
TO AND FROM DELABOLE (VIA TORPOINT) & DEVONPORT
ST ANDREWS ROUNDABOUT
TO AND FROM KINGSTON RINGMORE-BIGBURY KINGSBRIDGE DARTMOUTH & ELBURTON

Diagram showing the routes of buses using the new bus station in Plymouth

NO WAITING

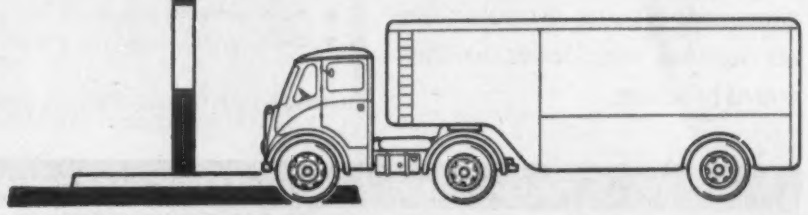
Waiting for an overhaul?

An I.C.I. trichloroethylene degreasing plant saves trouble and labour. It quickly removes all accumulated oil, grease and road dirt from mechanical parts, leaving them dry and thoroughly clean. Users of every type of transport appreciate the easier handling and more efficient inspection resulting from trichloroethylene degreasing.

ICI METAL DEGREASING SERVICE

For further information, please consult:—

IMPERIAL CHEMICAL INDUSTRIES LTD., LONDON, S.W.1.



DP.246

ELECTRICAL EQUIPMENT *for* ROAD AND RAIL

Over 3,000 trolleybus electrical equipments have been supplied by Metropolitan-Vickers—the photograph shows one of the new fleet of Ashton-under-Lyne trolleybuses fitted with Metrovick equipment.

by METROVICK

Railway installations have been supplied for all parts of the world—the illustration shows one of 40 straight electric locomotives supplied to the New South Wales Government Railways.

METROPOLITAN-VICKERS
ELECTRICAL CO LTD · TRAFFORD PARK · MANCHESTER 17

An A.E.I. Company

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KARRIER

low-load 2-3 tonner 'BANTAM'

with choice of petrol or diesel engine

Example of the petrol-engined 'Bantam' 2-3 tonner with special van bodywork.

EASY to handle, extremely economical, and with a high degree of driver comfort, this quality-built truck, available with alternative wheelbases, will give thousands of miles of trouble-free service. Ask your Dealer for illustrated brochure.

SALIENT FEATURES

- Light diesel engine developing 54 b.h.p; or 4 cyl. o.h.v. petrol engine developing 53.5 b.h.p., with long life chrome bores.
- Full forward control with over 11′ body-space on 8′ 2″ w.b. chassis; over 14′ on 10′ 2″ w.b. chassis.
- Gross vehicle weight 99 cwts.
- Exceptional manoeuvrability.
- Low platform easier and quicker to load.
- Powerful hydraulic brakes.
- Comfortable all-steel cab of imposing appearance.

A ROOTES PRODUCT—BUILT STRONGER TO LAST LONGER!

KARRIER MOTORS LTD. LUTON EXPORT DIVISION: ROOTES LTD. DEVONSHIRE HOUSE PICCADILLY LONDON W.1

NEWS FROM ALL QUARTERS

French Diesel-Electric Locomotives in Africa

A French Alsthom 1,100-h.p. Bo-Bo diesel-electric locomotive, one of several ordered by the Chemin de Fer du Congo Ocean to operate on the 317-mile line which traverses French territory from the West Coast port of Pointe Noire to Brazzaville on the Stanley Pool, has recently been exhibited in South and Central Africa.

Railway Wage Settlement

Settlement of the railway wage dispute was finally reached on Thursday evening last week when the N.U.R. decided to accept the B.T.C. offer of a 3 per cent wage increase for grades covered in the dispute, payable from June 30. The other two unions had earlier signified their acceptance. The Commission also offered to agree to a further meeting, probably in August, at which the whole rail wage structure could be reviewed. It now emerges that the B.T.C. envisages a total saving of something like £12 million a year from its two projected economy programmes.

Speeding Parcels Collection and Delivery

The Scottish Region has introduced two-way radio on parcel collection and delivery motor vehicles in Aberdeen. Preliminary tests have shown that this city is practically free from blind reception areas within the municipal boundary limits. Eight vehicles have been fitted with v.h.f. mobile radio equipment and the base transmitter is installed at the Aberdeen parcels office. It will be recalled that British Railways has recently taken over responsibility for the city parcels service previously operated by Aberdeen Corporation Transport Department.

Pension Schemes in Industry: a Survey

A sample survey of pension schemes in industry shows that the total number of persons covered at the present time is probably about 7 million men, i.e. half the total number of employed males, and 1¼ million women. The number of pensioners is over 1 million. In 1956, the total amount paid as contributions by employers and employed persons to private schemes (including, in the case of employers, payments for back service and deficiencies) was £246 million and the annual pension roll was about £50 million. The corresponding figures for public service and nationalised industries were about £221 million for contributions and £150 million for pensions.

Tour over L.N.W.R. Lines

For June 28 the Locomotive Club of Great Britain has arranged a railway tour over former L.N.W.R. branches in the Home Counties. A special train will start from St. Pancras at 1.25 p.m. on a 120-mile journey and will run via the North London incline (not normally used for passenger trains), Camden Road, Kensal Green and Willesden No. 7, thence to Wolverton including the branches to Rickmansworth Church Street and Aylesbury High Street, now closed to passenger traffic. From Wolverton the train will proceed to Newport Pagnell, returning to Wolverton and on to Euston, due 8.35 p.m. A Ramsbottom 0-6-0 saddle tank will be used for the journey over the Newport Pagnell branch.

Investment Guide to Employees

As a service to its employees, the Simms group of companies has produced a simple booklet advising them how and where to invest their savings. This is a first-rate idea for opening the mind to the possibilities of investment in industrial shares or any other form of saving.

Cars Exported in Train Loads

Since the end of January, when Vauxhall Victor cars for the American market were first dispatched from Luton by special express trains for Avonmouth, the London Midland Region has transported 1,104 cars to the docks at Newcastle, Hull, Newport and Avonmouth. Anticipating an increase in the traffic because of this, British Railways is making alterations to some 300 flat wagons to add to their fleet of suitable vehicles.

Simplon—Orient Electric

French Railways introduced electric traction between Dôle and Vallorbe last month, thus completing electrification between Paris and Switzerland via Vallorbe and Pontarlier and the Simplon Tunnel route. All expresses will be accelerated between Paris and Milan by up to one hour when the summer timetables are introduced on June 1. The Simplon-Orient Express (Paris—Istanbul) will be retimed and leave the French capital at 9.05 p.m. instead of 7.45 p.m., the arrival time in Milan being the same as now, i.e. 8.20 a.m.

No-Passport Trips from Victoria

No-passport trips from Victoria to Boulogne are to be run this summer by the Southern Region for the first time since 1939. The first excursion will be on Whit Monday, May 26, at 8.40 a.m., and giving 5¼ hr. in France. Cost will be 45s. from London or 30s. from Folkestone. Special identity cards will be required for these excursions and passengers will have to get them at the same time as their tickets on the day before the trip. They will need to bring three passport photographs with them to the Continental inquiry office at Victoria. Similar trips will be run from London to Boulogne from June to September. The cost of these trips will be 60s. From June 30 to September 10 the Southern Region will also run whole-day trips to the Brussels Fair.

Towards an International Pallet Pool

The International Standards Organisation technical committee on pallets for the carriage of goods in international transport has already recommended three sizes of flat pallets—32 by 40 in., 32 by 48 in. and 40 by 48 in.—and working groups have since been engaged in drafting proposals on large flat pallets—48 by 64 in. and 48 by 72 in.—which will be submitted for approval at a meeting of the full committee at Harrogate on June 16-19 during an I.S.O. meeting there lasting from June 9 to 21. The International Chamber of Commerce, with which I.S.O. maintains contact, has recently considered a request from the Council of European Ministers of Transport for advice as to which of three smaller sizes recommended above should be adopted as the standard for use in an international pallet pool.

Firestone

TRANSPORT

EXTRA MILEAGE TREAD
—Precision-balanced rib design increases service because tread wears slowly and evenly. Abrasion resistant rubber compound gives longer wear.

IMPROVED SHOULDER DESIGN
—Maximum protection against curb-scuffing. Deep grooves promote quick dissipation of heat.

SAFETY-TENSIONED GUM-DIPPED CORD BODY
—Tension drying of body cords eliminates tyre growth, tread cracking, and gives positive mating of dual tyres.

WIDER, FLATTER TREAD
—More rubber on the road gives more uniform wear, increases mileage and gives greater resistance to skidding.

RIM-FITTING BEADS
—Stronger bead foundation reduces bead and side-wall failure because excess chafing and flexing are eliminated.

DRIVE SAFELY

Experience Counts

44 factories throughout the world. Firestone total sales exceed £1,000,000 per day.

Firestone TYRES—
consistently good

COMMERCIAL AVIATION

Atlantic Traffic Disappointment

S. AND W. AND AERLINTE SHARES

SCHEDULED airlines carried 4.7 per cent more passengers and flew 20 per cent more flights across the North Atlantic during the first quarter of 1958 than a year ago, but they suffered an 8.5 per cent drop in capacity utilisation, the International Air Transport Association has announced. A total of 159,151 passengers traversed the route on 5,113 flights, 112,356 on tourist and 46,795 on first-class services, according to reports compiled on behalf of the carriers by the secretary of I.A.T.A. Traffic Conference No. 1 in New York. Seats available on the North Atlantic services showed an increase of 23 per cent, a reflection—compared with the 20 per cent increase in flights—of the increased capacity provided by new aircraft types on the route. Cargo was up 3.2 per cent to a total of 5,090,021 kg. carried, and mail was up 15.6 per cent to 2,449,005 kg. There were 467 all-cargo flights. Although the total of passengers carried improved over last year, the increase in traffic did not meet airline expectations; hence the reduction in load factor. For this the general economic recession which made itself felt during the quarter was held largely to blame. Average load factor for the period was 53 per cent (61.5 per cent). More than 73,800 passengers flew across the North Atlantic to Europe during the quarter, but they were exceeded by the 85,300 who used the services of the scheduled airlines in the opposite direction.

Lufthansa and Austrian Co-operate

On April 26 an agreement between Lufthansa (German Airlines) and Austrian Airlines (A.U.A.) took effect. It is a general agency agreement in addition to a pool agreement on the Frankfurt—Vienna route. Lufthansa will be the general agent for Austrian Airlines in Germany and Austrian Airlines will act as general agent for Lufthansa in Austria.

Air Ceylon Plans Expansion

Air Ceylon plans to operate a second weekly service to London. At present it operates once weekly from Singapore to London via Colombo, Bombay, Karachi, Bahrein, Cairo and Rome. The new schedule, which Air Ceylon intends tentatively to inaugurate later this year, was discussed at the recent talks in Bombay, when a deputation led by the Minister of Transport, Mr. Maitripala Senanayake, successfully concluded negotiations for the grant of air traffic rights to Air Ceylon by the Indian Government. Negotiations are also going on for replacement of the Lockheed Constellation aircraft now operated by the larger Super-Constellations.

Sabena Capital Increase

By a law of April 9, 1958, Sabena was authorised to increase its capital from B.fr.500 million to B.fr.750 million and, on or after January 1, 1960, from B.fr.750 million to 1,000 million. This double increase of capital will be submitted for approval to the general meeting of the company's shareholders. It is laid down in the company's articles of association that the capital be subscribed as to one half by private subscribers and the other half by the Belgian, Belgian Congo and Ruanda-Urundi Governments. By the same law the limit of Sabena's borrowings under Government guarantee was raised from B.fr.2,000 million to B.fr.4,000 million.

Increased S.C.A. Use of Ostend

Silver City Airways this month increased still further its already extensive use of Middlekerke Airport, Ostend, with the inauguration of a once-weekly passenger service from Blackpool. The new service, operated by 36-seat Douglas DC3s, was the first of a series of new or revived Silver City international services to be operated from Northern England. Ostend is the Continental terminal for a high proportion of Silver City's extensive inclusive tour traffic, a large fleet of Blue Cars coaches being based there. In addition, Silver City air ferry traffic to Belgium has more than doubled this year. The runway at the airport is being lengthened by 600 ft. to 1,400 yd., the apron is being enlarged and a second terminal building erected. S.C.A. began another service to Belgium on May 13 in the shape of twice-weekly flights from Newcastle to Brussels via Leeds.

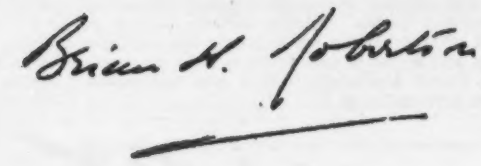
Seaboard and Western Invests in Aerlinte

Seaboard and Western Airlines, from which Aerlinte Eireann has leased Lockheed Super-Constellation aircraft for its transatlantic service inaugurated on April 28, has agreed to invest £500,000 in the Irish company. Taking into account the capital of £1,425,000 already subscribed by the Irish Government, this will give Seaboard and Western a 26 per cent interest in the company. The United States firm will pay in dollars for these 500,000 shares on the basis of a par value price per share of $2.80 (£1 sterling) and will be represented on the board of directors of Aerlinte Eireann. Seaboard and Western has filed its application to take up these shares with the Civil Aeronautics Board. Commenting on the announcement, Mr. J. F. Dempsey, general manager of Aerlinte Eireann, said: "It is a most encouraging vote of confidence in the operation and particularly gratifying as this is the first private investment in air transport in Ireland."

Radio-Active Materials Code

A 24-page amendment—covering the regulations on radio-active materials—to the world airlines code for handling special cargoes has just been issued by the International Air Transport Association with the approval of all interested governments. The new regulations become effective on June 1. These regulations will expand the curie limits for a wide variety of materials currently carried and will allow transport of a further group of radio-active substances which have found increasing use in medicine and industry. These include the isotopes cobalt 60 and gold 198 used in radio-therapy, several radio-active drugs and the radio-active industrial gases krypton 85 and tritium. The code's regulations govern the packaging, labelling, handling and stowage of some 2,500 substances which require special treatment for carriage by air. Because of the rapid discovery of new isotopes and of new uses for these and other radio-active materials the code is kept under constant review to improve and expand it for the general benefit. Any standard of packaging must be acceptable to the main isotope producing countries, and the packaging specified must be capable of withstanding not only normal, but also emergency conditions of transport. In every case the complete container assemblies for radio-active materials must be of types approved and certified by a competent government agency in the country of origin.

BRITISH RAILWAYS



General Sir BRIAN ROBERTSON, Bart., G.C.B., G.B.E., K.C.M.G., K.C.V.O., D.S.O., M.C.

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Under the chairmanship of General Sir Brian Robertson the British Transport Commission initiated its dynamic plan for the revivification of British Railways early in 1955. Railway modernisation is now showing useful results and, indeed, the present wage settlement is dependent on its bearing fruit rapidly so that the railways can carry the cost from internal resources without inflation. Sir Brian was born on July 22, 1896; his father was Field Marshal Sir William Robertson, who was C.I.G.S. during the 1914-18 war and later commanded the British Army of Occupation in Germany. From the Royal Military Academy Sir Brian was commissioned in the Royal Engineers in November, 1914. With one brief interval he continued on active service in France, Belgium and Italy until the Armistice in 1918, winning the D.S.O. and Military Cross and being thrice mentioned in dispatches. He was again mentioned in dispatches and awarded a brevet as major for his work in the Waziristan Expedition in 1922-23. After passing through the Staff College and making a prolonged tour of South America to study the military resources and organisation of that continent, he retired from the Army in 1933 and settled in South Africa. Two years later he became managing director of Dunlop South Africa, Limited. After the outbreak of war in 1939 he joined the Union Defence Force from the reserve of officers and went with the South Africans to the Middle East. His success in administration during the Western Desert campaigns of 1941-43, led to his secondment from the South African Forces as Chief Administrative Officer to the Commander-in-Chief, Italy. Sir Brian was restored to the active list, with the rank of major-general, in October, 1945, and a few weeks later he became Chief of Staff and Deputy Military Governor, British Zone, Control Commission for Germany. He was made lieutenant-general in 1946, and general in 1947, becoming in that year Military Governor and Commander-in-Chief of the British Forces in Germany and in 1950 United Kingdom High Commissioner, Allied High Commission. The same year he was appointed Commander-in-Chief, Middle East Land Forces, and in March, 1953, it was announced that he had been appointed Adjutant-General to the Forces with effect from the following summer; the Secretary of State for War agreed to release him from that post to succeed Lord Hurcomb as chairman of the B.T.C. in the autumn of 1953. In that capacity he has clearly seen the need for an injection of capital into public transport to enable it, and especially the railway section, to fulfil its proper task in the national economy. Sir Brian Robertson is a vice-president-elect of the Institute of Transport.

IN PARLIAMENT

Next Road Programme

HALF DEFICIT LOAN USED UP

STRENUOUS denials were given by the Minister of Transport last week to suggestions expressed in Members' questions that the road programme now under way would begin to slow down because insufficient advance preparation was being made. He was unable to say when the next road programme would be announced but preparatory work was going ahead. MR. WATKINSON refused to accept the statement by the British Road Federation that at present road traffic and congestion were growing quicker than the relief being given by the present road programme. MR. ERNEST DAVIES suggested that when the present four-year programme expired, unless there was adequate provision now, there would be a slow-down because the indications were that inadequate preparation was being made and that there would be a slow-down because there was not sufficient work in the pipeline to ensure the programme continuing at its present tempo. Mr. Watkinson again denied this. They had, he said, established a new principle of having a reserved list of schemes, on which preparatory work was being done. [The present road programme covers the period 1955-56 to 1958-59. In July, 1957, the Minister of Transport announced a further programme of authorisations covering the years 1958-59 to 1961-62.—Editor.]

Railway Economies

As we went to press MR. GEOFFREY WILSON and MR. GEORGE STRAUSS had put down a question to the Minister of Transport as to what economies the British Transport Commission had agreed with him to make to improve its position as part of the railway wages settlement.

Half Deficit Loan Used Up

Advances from the Exchequer to meet deficits on railway revenue account under the Transport (Railway Finances) Act, 1957, totalled £127 million up to March 31, 1958, said the MINISTER OF TRANSPORT. Of this total £117 million relates to deficits before January 1, 1958; i.e. a payment of £10 million was made for the first quarter of 1958.

Commercial Vehicle Purchase Tax

MR. ERNEST DAVIES moved an amendment to the Finance Bill to reduce the tax on road vehicle chassis from 30 per cent to 15 per cent. He said that buses and coaches were exempt from tax, and other vehicles were taxed separately. The Opposition was of the opinion that it was undesirable that the tax should remain on commercial vehicle chassis. It was a direct tax on production or distribution, and the only example of a direct tax on capital investment. As it fell on essential and non-essential transport it was unfair to retain it as a disincentive to the use of goods vehicles. It was not intended that the tax should be permanent at the time of its imposition. The net cost of halving it would be about £5,500,000. SIR HARRY HYLTON-FOSTER, Solicitor-General, said of course if the industry invited consultations on any point the Government would be delighted to meet them, subject to the fact that it was quite impossible to discuss matters such as tax reduction before a Budget. It was probably true that the tax was imposed as a temporary measure but temporary measures had a way of becoming permanent. The actual cost in terms of purchase tax of the amendment would be £7,500,000 (a figure MR. JOHN EDWARDS at once queried). It could not be expected that since the Chancellor had gone as far as he could this year in respect of reorganising purchase tax, to the extent of £41 million, he could accept a loss of that kind.

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RAILWAY SIGNALLING

Anglo-Swiss Link

A NEW association in railway signalling has just been established in that Henry Williams, Limited, Darlington, has been appointed by Integra A.G., Zurich, Switzerland, sole agent and exclusive licensee for Integra railway signalling systems and all associated equipment in United Kingdom, Eire, Crown Colonies and Protectorates. This arrangement has been made in agreement with Tyer and Co., Limited, of Dalston, which was the former Integra associate. Henry Williams, Limited, is an old-established firm in permanent way and mechanical signalling engineering with more than 70 years' experience in this country and overseas, now in its third generation of the Williams family, while Integra is the leading company of a Swiss industrial group entirely devoted to railway signalling with over 40 years' experience.

The spring switch lever for hand-operated points was invented by Henry Williams in 1885 and after a succession of improvements the trailable two-way lever was introduced in 1911. It has been manufactured ever since with various improvements and its basic principle is now followed by manufacturers all over the world. At the same time the firm also developed the flexible spring steel stretcher bar for connecting switch blades. These were a marked improvement over the solid rod and pin type which had been used previously, and they have become a standard on British Railways and elsewhere. The company also has a manufacturing branch in India, Guest Keen Williams, Limited, and drop forged junction and lift fishplates are a speciality.

Swiss Apparatus

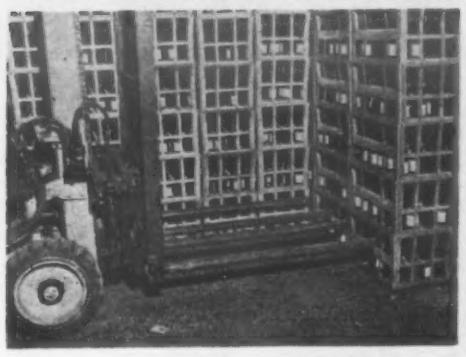
The advent of miniaturisation has found Integra prepared for the supply of well-tested miniature railway signalling equipment, and as a result systems with preprinted circuits and plug-in relay sets have been supplied to the Swiss Federal Railway authorities, followed by the National Railways of Luxembourg and railway organisations in Central Europe. The Domino panel system, with its associated geographical circuit technique, has become well established. An inductive method of automatic train control has also been developed and is used by the Swiss Federal over its entire network. A lighter version, the approach warning device, has been installed on mountain railways in Switzerland, in Egypt, Sierra Leone and now in Persia.

Mr. Sydney Williams, the former signal engineer of the London Midland Region, has joined the board of Henry Williams as specialist signal director. A start has already been made in manufacturing Integra equipment at Henry Williams' Darlington works. A new department has been formed under Mr. H. A. Codd to specialise on electric signalling scheme work, etc., and premises have been purchased in the Watford area.

CRATE HANDLING FORKS

Attachment Replaces Pallets

WHEN J. and R. Tennant, Limited, decided that arrangements for transfer of bottled and canned beer from store to vehicle loading dock or to stockroom at its Wellpark brewery in Glasgow must be speeded up there were the inevitable problems to be solved no matter what form of mechanical handling was applied. The existing system of roller conveyors restricted storage space and double-handling and stacking was involved. Stock turnround was difficult and breakages were high. It was decided to introduce fork-lift trucks, but this involved reducing three floor levels in the store to one level and constructing a loading dock, besides other structural alterations.



Conveyancer E2-20 fork truck with four-tine prong attachment going into a unit load of crated beer

Expenditure of perhaps £10,000 on the necessary 3,000 pallets to handle the full output of 500,000 bottles daily was, however, considered an indefensible extra. Instead the company developed a four-tine attachment for the six Conveyancer E2-20 battery-electric fork-lift trucks which were ordered for the conversion. This is applied to the handling of crates, which are of Ross Duralite pattern, weighing less than 5 lb. The tines are so shaped that they will pass easily between the necks of bottles in the crates and a unit load of up to 36 crates on a six-crate base can be handled. Breakages are rare.

Handling Canned Beer

The trucks are equipped with sideshift and to take care of difficulties which might be encountered from deformed crates when stacking two or more units high, a thin sheet of plywood is inserted between unit loads. These crates are used in the home trade; unit loads are delivered to vehicles in the loading dock for distribution. Tennant is also, it is claimed, the largest producer of canned beer in the United Kingdom and unit loads of this product, which is made up in cartons, are palletised by using a layer of six crates as a base. It is also possible to use the same technique when dealing with exports in cases, though these are stored on normal pallets in the export stores.

Experience of the new handling system shows that has increased the storage capacity despite the need to appropriate space for the covered loading dock. Vehicle turnround time has been improved. Most important of all, bottle breakages have been reduced by 80 per cent over a period of six months and still further improvement is likely in this direction as the truck drivers gain experience. Each Conveyancer truck handles about 80 tons in a 10-12 hr. day.

Carrier Fork Dimensions

The crate carrier forks evolved for this class of operation will handle any open-sided crates provided there is sufficient space for the tines to enter between the forks. In the Tennant application, the bottles are retained in position at a single point near the top of the body and are accordingly

Using a six-crate base canned beer in cartons may be lifted by the crate fork trucks

readily displaced by the tines if there is a collision on entry. The tines can be adjusted laterally to suit various crate sizes if desired. They are 37 to 43 in. in length, 1¼ in. or 1¾ in. in diameter, and have a tapered blade 6 or 9 in. long; the blade edge is vertical. The rated capacity of this attachment varies from 1,000 lb. to 1,800 lb.

The raw materials division of George Cohen Sons and Co., Limited, has moved to Trinity Road, Kingsbury, Tamworth, Staffs. Telephone numbers are Hurley 281 and Ashfield 1191.

The surface treatment, comprising nickel deposition and a chromium surface finish, developed by Fescol, Limited, North Road, London, N.7, has provided satisfactory protection to the steel rams of hydraulically operated covered gangways used at Southampton Docks. Earlier serious pitting of exposed surfaces of the rams due to the corrosive effect of salt spray is said to have been overcome by the Fescol treatment, which was undertaken between 1953 and 1956.

ENGINE MAKER'S JUBILEE

(*Continued from page 10*)

was introduced. This engine was originally designed with the Ricardo Comet indirect injection but was later redesigned, to be introduced in 1947 as the Mark II embodying an open combustion chamber and four valves per cylinder.

In 1945 Mirrlees, Bickerton and Day became a member of the Brush Group and there followed considerable reorganisation and expansion. The area of the works has gradually been expanded to 8 acres with a covered area of 320,000 sq. ft. and a progressive programme of machine tool replacement has now renewed almost 95 per cent of the equipment. During 1949, when the demand for the HF and TL ranges was at its height, the company started the development of two new types, the J and K series, which were planned to cover as wide a horsepower range as possible in in-line and V-form engines using only two cylinder sizes.

Comprehensive Coverage

Both the J and K series were designed from the start for very high specific power outputs and to incorporate when required both turbocharging and charge-air cooling. Crankshaft sizes, bearing areas, structural strength and ability to withstand thermal stresses were all designed well in excess of anticipated commercial requirements. Both the new designs embody direct injection and four valves per cylinder. The J type, with 9¾ in. by 10½ in. cylinders working at a b.m.e.p. of 94 p.s.i. normally aspirated, and 160 p.s.i. with turbocharging and intercooling, is available with from three to 16 cylinders covering a power range from 111 b.h.p. at 400 r.p.m. to 2,272 b.h.p. at 900 r.p.m.

Long-stroke versions of the J engine have since been developed and are available in vertical form only; with the stroke increased to 12½ in., the JL range provides a 20 per cent increase in power over the short-stroke counterpart for speeds up to 750 r.p.m. The larger K series has cylinder dimensions of 15 in. bore and 18 in. stroke and is also available with turbocharging and intercooling and in sizes from three to 16 cylinders. The power range covered is from 192 b.h.p. at 200 r.p.m. for the naturally aspirated three-cylinder to 4,128 b.h.p. at 428 r.p.m. for the turbocharged and intercooled V16 engine.

With the standardisation of many of the components embodied in these new engines, the customary benefits of rationalisation have followed. The company has been able to introduce novel methods of production so that, for the first time almost anywhere in the world, engines of this size are being produced by flow methods. More efficient production naturally leads to increased value for money for the customer, who also benefits from an easing of maintenance and spares provisioning problems when engines of various powers are operated.

The company can well be proud of its 50-year record of achievement in this field, which has been a major contribution to the development and application of the diesel engine. Rich in tradition and with research and design teams fully alive to future possibilities, Mirrlees, Bickerton and Day, Limited, can face the next half-century with the confident anticipation that its high place in the industry will be maintained and enhanced.

BOOK NOTICES

Trade and Technical

BITUMEN IN ROAD SURFACING. (London: The Shell Petroleum Co., Limited, 1 Kingsway, W.C.2.) Distributed free by all companies marketing Shell bitumen in more than 80 countries, this interesting book gives comprehensive background information on the use of bitumen in road surfacing. It does not attempt to cover road construction theory or practice in any particular country but is valuable as a general guide to overall practice in the use of bitumen and cutbacks in everyday road construction and for summarising the many years' experience accumulated in various parts of the world by the technical staff of the Shell Company's bitumen department.

* * *

ON THE OLD LINES. By Peter Allen. (London: Cleaver-Hume Press, Limited, 31 Wrights Lane, Kensington, W.8. Price 25s.) Once again the author has produced a feast for the railway enthusiast—a feast of great variety and attraction illumined by the author's own excellent photographs. Mr. Allen is a globe-trotter in a big way in the course of his work and he has kept an eye both keen and loving, for railway scenes as he passes through distant lands, so that he can conjure up anything from the French President's Special to the 2-ft. gauge Edaville Railroad in the U.S.A. Fiji, Portugal, Chile or Sweden—all have their charms, depicted in words and pictures.

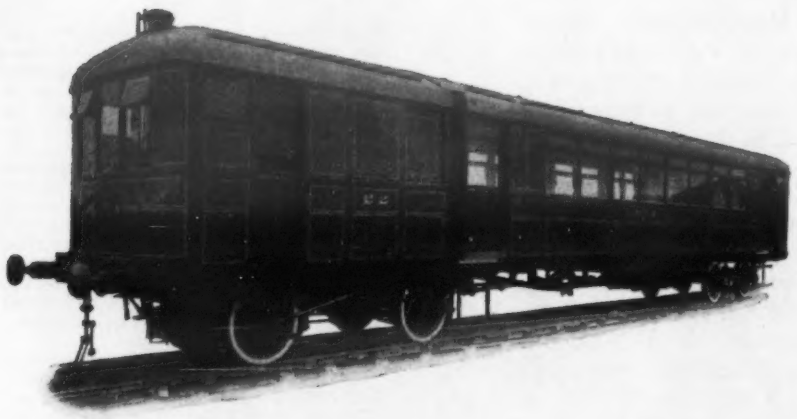
* * *

GREAT BRITISH TRAMWAY NETWORKS. By Wingate H. Bett and John C. Gillham. (London: The Hon. Publications Officer, Light Railway Transport League, 21 Endymion Road, N.4. Price 30s., plus postage 1s. 6d.). A most welcome addition to the library shelves is the third edition of this well-known reference work which now makes a complete record of tramways in this country as they existed and describes or shows on the numerous maps many other interesting lines which did not get beyond the project stage. New chapters in this greatly revised and enlarged edition deal with Irish tramways, the financial groups responsible for British company-owned tramways, and British tramway companies overseas. The 223 pages are excellently illustrated with nostalgic scenes from the past which alone will commend this volume to many.

* * *

THE CHANNEL TUNNEL. By Humphrey Slater and Corelli Barnett. (London: Allan Wingate (Publishers), Limited, 12 Beauchamp Place, S.W.3. Price 21s.). With an official study group sitting on the subject at the moment and the European Free Trade area making it more important than ever, the Channel Tunnel has undergone a revival of public interest. Here a painstaking pair of authors present the available facts on a long succession of schemes starting from that of 1802 with interest and succinctness. The subject is second to none in fascination and stupendous possibilities and this ready reference to what has been said, thought and done about the project will be welcomed both by transport men and civil engineers. The authors are to be congratulated on gathering together a fine collection of pictures of various schemes, but misplaced facetiousness and an attempt to make the book of popular appeal mar the text.

EXPERIENCE COUNTS!



1927

Steam Railcar for the London & North Eastern Railway

Diesel Railcar Unit for the North Eastern Region of British Railways

1958

METRO-CAMMELL

HEAD OFFICE: SALTLEY · BIRMINGHAM, 8

LONDON OFFICE: VICKERS HOUSE · BROADWAY WESTMINSTER · S.W.1

ROAD VEHICLE INDUSTRY

Wakefield Installation for A.E.C.

PROBLEMS of having immediately available at the end of the production line a variety of grades of oils and greases to suit every type of chassis produced have been met at the Southall works of A.E.C., Limited, in a new installation supplied by C. C. Wakefield and Co., Limited. The problems arose due to the diversity of types of chassis produced by A.E.C. and the individual lubrication requirements of vehicles destined for various types of service in different climates, problems which do not usually occur in mass production, for which C. C. Wakefield has produced many line lubrication schemes for prominent manufacturers. The Lubrequipment installation at Southall, which has been evolved in collaboration with A.E.C. works engineers department, employs automatic retracting overhead hosereels, fed through high-pressure booster pumps from their respective oil tanks or quickly replaceable factory-filled 400-lb. grease containers. The oil and grease connections on the hosereels cater for all lubrication systems on A.E.C. vehicles and hose lengths are adequate to reach every part of the largest chassis. Booster pumps are powered from the works compressed-air system at 80 to 100 p.s.i., though they will function at a much lower pressure should fluctuations occur.

Carburol Aromatic

IN a news sheet published for its annual sales convention, United Lubricants, Limited, announces two new products—2-Strol for two-stroke engines and Carburol Aromatic, an upper cylinder lubricant.

Polyester Deep Filler

DISTRIBUTION to the transport industry of a new polyester deep filler for coachwork, Kwikfill, produced by Kenilworth Manufacturing Co., Limited, has been entrusted to Vulcan Products, Limited, 37 Queen Square, London, W.C.1. Kwikfill is supplied as two separate pastes which are mixed for use. Hardening time varies between 15 and 30 min. depending on the proportions in which the pastes are mixed. With one paste coloured blue and the other yellow, the shade of green produced in the mixed material provides an indication of the hardening time. Kwikfill can be used for filling, binding, jointing and sealing; it sets to a hard even-grained surface that can be treated as part of the metal to which it has been applied.

Pirelli in Birmingham

SITUATED in Heath Mill Lane, a new Birmingham branch office of Pirelli, Limited, was officially opened on May 13. The new Pirelli House, Birmingham, built to a design on which future regional headquarters of the company will be modelled, comprises office accommodation, and a warehouse 118 ft. long and 50 ft. wide, with separate loading bays for tyres and cables. Comprehensive stocks of tyres and tubes for all types of motor vehicle and wires and cables for the electrical and automobile industries are maintained.

B.M.C. Replacement Engine Plant

WORK now nearing completion at the British Motor Corporation factory at Durbar Avenue, Birmingham (a subsidiary of the main Morris engine factory at Courthouse Green, Coventry), will enable it to accommodate the largest and most modern plant producing replacement vehicle engines and gearboxes in the world. Its planned output for the end of May is 4,000 engines a week, doubling the present figure, and includes replacement units for most Austin and Nuffield vehicles on the roads today, some of them manufactured more than 20 years ago.

B.P. Touring Service

HELPFUL to drivers intending to tour in Europe and to visitors touring in this country, is a new service introduced by the British Petroleum Co., Limited. The B.P. Touring Service comprises two basic kits—a planning kit and an en route kit. The planning kit, which is obtainable by filling in a request card at a B.P. service station, is housed in an attractive container and comprises a new road map of Western Europe, with a relief map on the reverse, the well-known B.P. 12-language conversation guide and a road sign windscreen sticker. With the map there is a booklet of coupons which are exchangeable at B.P. Touring Service stations in individual countries for the en route kit comprising a large-scale road map of the country, local information and a souvenir gift, usually a pictorial gramophone recording.

Dagenite Battery Covers

PARTICULARLY useful on tractors and works vehicles and equipment, four new types of easily removable battery covers have been introduced by Holsun Batteries, Limited, for Dagenite batteries fitted in exposed positions.

Longer-Range W. and E. Electric

DETAILS are now available of the longer-range battery-electric vehicle first shown by Wales and Edwards, Limited, Wyle Cop, Shrewsbury, at the 1957 Dairy Show. Named Rangemaster, the new vehicle has a top speed of 12 to 14 m.p.h. with full load and an average range, with 150 stops, of 30 to 35 miles and many of its units are interchangeable with those used in the established 25-cwt. long-wheelbase chassis. Its introduction marks a break with tradition for the company, which has hitherto produced mainly battery-electric vehicles for the low-speed concentrated type of delivery work. On this page, we illustrate two examples of the attractive and functional plastics bodywork developed by Wales and Edwards for the new chassis.

Two different types of structural plastics bodywork on the Wales and Edwards Rangemaster battery-electric chassis

Brussels Exhibition Transport

PROVIDING transport for visitors within the Brussels Exhibition grounds and to and from outlying car parks is a growing fleet of road trains, each comprising a Mercedes-Benz bus and two four-wheel trailers. The 20 sets initially commissioned have proved so successful that, as we recorded briefly in our May 10 issue, a further 20 were ordered and are now in course of delivery. The complete train is a joint German-Belgian effort apparently based on a design originally developed by the German concern, Hermann Harmening, Bückeburg. The first 20 vehicles employed petrol-engined Mercedes-Benz O319 bus chassis-cabs hauling two four-wheeled trailers having running gear by Blumhardt, Wuppertal, and open-sided bodywork seating a total of 72 (12-16 in the bus) by Spirolit, Liége. The second 20 sets are generally similar but they are powered by Daimler-Benz diesel engines and the capacity of the trailers has been increased to provide a total of 80 seats.

One of the Brussels Exhibition road trains drawn by Mercedes-Benz O319 bus

Paris Show Space Applications

CLOSING date for applications for space at the 45th Paris Motor, Commercial Vehicle, Motor Cycle and Cycle Show has been announced as June 30. The car and commercial vehicle sections of the exhibition will be open from October 2 to October 12.

B.U.T. Coverage in Africa

SUBSIDIARY companies of Leyland Motors, Limited, in Africa are to handle all contracts for the entire range of trolleybus chassis and diesel train equipment marketed by British United Traction, Limited. Leyland Albion (Africa), Limited, Johannesburg, and the newly-formed Leyland Albion (Central Africa) company in Salisbury will together cater for the requirements of operators in all areas from the Cape to the Congo.

Iron Castings Information

AN indication of the scope and facilities of the Lifford Foundry, Kings Norton, Birmingham, 30, of R. J. Hunt and Son, Limited, for the production of high-quality grey iron castings, is given in an illustrated brochure recently published by the company. Illustrations show how mechanisation in one of the bays has resulted in a substantial production increase in only one-sixth of the floorspace previously occupied. Although 90 to 95 per cent of the company's output is for the motor industry, facilities exist for jobbing work up to 2 tons in weight.

From April 7, the address of the Dundee branch office of British Insulated Callender's Cables, Limited, will be 2 South Ward Road, Dundee. Telephone 5926.

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But now, the famous Leyland Pneumo-Cyclic gearbox ... with 2-pedal control ... is offered as an alternative to the existing constant mesh gearbox. This provides a simplicity of driving control that makes the 'Tiger Cub' the ideal bus for the growing number of operators who want single-deckers for one-man operation.
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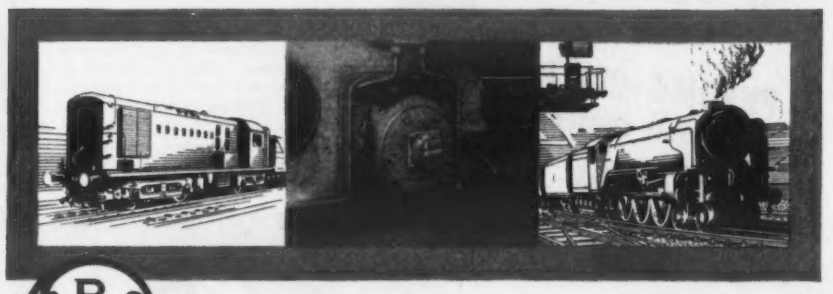
For more details on BTH Mileage Recorders for railway service please write. Our staff of specialist engineers will be glad to advise you.



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Bus Operators at Harrogate

(*Continued from page 9*)

Alderman J. H. Whitaker (Todmorden) said that in over 70 years he had learned to distrust the experts. One should never be in the van of progress because somewhere on the road you would meet the leaders turning back. Manufacturers would make anything if you would buy it, but they had to prove it economical.

Mr. W. M. Little (Edinburgh) protested against the trend towards "gadgetry." Could they instead eliminate points that needed attention? Rubber suspension might be a case in point. The simple parking shed must avoid a vehicle going out damp and cheerless on a bad morning. Would one more gadget, an independent heater run on tax-free fuel, be a good idea?

Changing Scene Discussed

The discussion on the paper "The Changing Scene," by Mr. George A. Cherry (see abstract in our May 17 issue) was initiated by Mr. D. M. Sinclair of Birmingham and Midland Motor Omnibus Co., Limited. He suggested that busmen need not be too pessimistic about traffic recession, since traffic had reached special peaks in the wartime and postwar periods. Although some cuts were needed now, expansion continued on other routes. It was amply proved that nationalisation was no cure for the ills of any industry. The only subsidy the buses needed was relief from the 200 per cent fuel tax. They paid for their track by taxation, but whereas the railways had its exclusive use they had to share with others. Private hire work was welcome but the revenue was negligible against stage carriage revenues. If they were to retain the confidence of passengers the service must be reliable. In the search for economy and efficiency they had the right to expect union support and in fact, appreciation, of their efforts to make the job smoother and more comfortable. A high degree of co-ordination existed between company and municipal operators and a Midland conference had recently found the maximum was done already, with one or two minor exceptions.

Alderman J. H. Whitaker (Todmorden) said there was no difference between subsidising industry by sheltering it behind high prices and subsidising it through taxation, but under the former arrangement old people on fixed incomes came off badly. The industry with good conditions referred to by Mr. Cherry was able to reflect its high costs in high prices. Really the consumer paid wages, not the employer, who was only an agent.

Elementary Justice

Mr. T. P. O'Donnell (Ashton-under-Lyne) made a comparison of company and municipal service and said that in the end it amounted to "all should earn a just return." A Utopian wage arrangement would be to have the same scale throughout the country. Mr. T. G. Davies (Western Welsh) thought that wholesale cuts in service were the only way out of rural operating difficulties. They should not consider removal of fuel tax a subsidy—it would be belated but elementary justice. The question had been raised as to whether the regular rider subsidised the casual rider. In Western Welsh they did not think so. If they could shed some of the peak traffic, indeed, they could reduce costs. The deplorable attitude of some would-be nationalisers was that it would not matter, if nationalisation were carried out, how much the service then cost to operate.

Mr. R. C. Moore (Sheffield) said that Mr. Cherry had omitted to point out that the 30-ft. double-deck vehicle saved peak-hour extras, which numbered 400 in Sheffield. The seating capacity of 400 60-seat buses could be provided by only 300 80-seaters, which would thoroughly justify the 12½ per cent additional capital cost. It was foolish to throw away the advantage of the larger box dimensions by saying they did not want them. There was an advantage also in the front entrance and the driver's supervision of boarding and alighting.

Individualists

Mr. H. Bottomley (Ribble) claimed that bus managers were individualists because there was no universal panacea for their troubles; differing conditions brought out different needs and the reception of ideas differed between one district and another. He saw no connection between the bus industry—a creation of the past 45 years or so—and the conditions of 150 years ago; in pay and conditions generally they had been above contemporary industry and now they were paying all they could afford to do. Increase of vehicle capacity from 32 to 44 on single-deckers and 53 to 72 on double-deckers had helped them meet higher costs and had not reduced scheduled speeds. He was prepared to challenge Mr. Cherry that Ribble could keep better time with 72 seaters than Birkenhead did with 61 seaters. They wanted no talk of subsidy or nationalisation. They did need relief from the shocking fuel tax and that money from road taxation should be spent on roads. They did not want roads congested while they were compelled to build costly bus stations. An increase of the speed limit from 30 to 45 m.p.h. would help.

Councillor S. I. Dyson (Sheffield Joint Omnibus Committee) felt there was a phobia on public versus private ownership. They were all there as operators. The fact was that the industry was giving good value for money and this should be made better known to the public by a better public relations organisation. If better service was needed then the public must be prepared to pay.

Good Cheer

Mr. B. Goodfellow (Sheffield United Tours) imparted a cheerful note by saying that tours bookings were 17 per cent up and express traffic was looking better than earlier in the year. To make "the changing scene" he would like to change vehicles every five years. Their capital cost was a handicap, but there was a large demand for second-hand British vehicles overseas and it might help them if they carried out the sales through the industry rather than through the dealers.

Mr. N. H. Dean (Yorkshire Traction) said that although the public did not mind about prices of shoes, shirts or chemises, they resented increased bus fares and he attributed it to the procedure under the Road Traffic Act which gave rise to newspaper publicity and opposition by local authorities. Seeds of doubt were thus sown at the outset which could not be counteracted by operators' own press conferences. There were substantial grounds for fare fixing by operators, just as members of other industries could fix their own prices. Although peak traffic was in 1955 it had to be remembered that their traffic was still 70 per cent above pre-war. The strike last year gave help to scooter manufacturers who stressed fuel cost in their advertisements. Bus operators ought to give a straightforward challenge to that industry. How about:

If you row
With your wife
Don't shoot her;
Instead
Buy her a scooter.

He sincerely recommended "Training Within Industry," the labour relations section of which was well worth studying. If fuel tax came off it might not be possible to reduce fares straight away but it would be a cushion that would facilitate a lower fare scale generally and enable better service to be given.

High-Capacity Double-deckers

Mr. C. Warwick Wroth (Potteries) added his support to the front-entrance high-capacity double-decker; they worked well. Extra seats were appreciated by the public and they cost nothing more to operate except on depreciation. There was no decrease in speed, so that the undertaking was better off. It was entirely a misconception that the public would not benefit if the fuel tax came off.

The contest for the Maynard cup took place on Pannal Golf Course on the Tuesday the conference opened. The winners were Messrs. B. A. C. Gray of J. Arnott and Sons, Limited, and C. B. Howling (Power Petroleum Co., Limited). Runners-up were Messrs. A. B. Evans (Hallam, Sleigh and Cheston, Limited) and F. Wharton of G. D. Peters and Co., Limited. Special tribute was paid to Mr. H. J. Ferguson, who inaugurated the organisation of the competition in 1935, upon his retirement, by Mr. Charles Baker, who has acted as starter for 20 years. Later Mr. Ferguson was presented by his golfing friends with a teamaking set.

★

RAILWAY LEGISLATION

(*Continued from page 8*)

Lancaster was compelled to pay £20 a year to "the travellers' guide" across the Leven estuary for loss of business after the railway opened, whilst in 1865 the Manchester, Sheffield and Lincolnshire Act, which authorised certain fixed bridges over the Sankey Brook Canal, provided for payments to owners of vessels with masts which could not be lowered. As between railway companies may be mentioned payment by the L. and N.W. to the North Union Joint Fund for loss of traffic caused by the opening of the Winwick Junction and Golborne direct line in 1864, and by the Midland to the Sheffield and Midland Railways Committee for diversion to the New Mills and Heaton Mersey route in 1902.

Continuing Expense

It will, of course, be obvious that much of the expense incurred in providing accommodation works to overcome the opposition of landlords and secure the support of local people, still figures in the capital value of British Railways. For how much these provisions are responsible it is difficult to say because the initial cost of individual works is not known. But it is clear that the large number of little-used occupation bridges and level crossings alone accounts for a considerable sum. In addition there are "hidden expenses" such as the diversion of lines, sometimes only slight, planned to avoid the estates of landed gentry and artificial tunnels made where open cutting would ordinarily suffice.

Statistical

In conclusion, it may be of interest to refer to the acts themselves. The three largest, in terms of share capital and mileage authorised, are:

Great Northern ..	June 26, 1846	£6,000,000	285¼ miles
Lancashire Derbyshire and East Coast	August 5, 1891	£5,000,000 (later increased to £8,233,290)	161¼ miles
Manchester Sheffield and Lincolnshire	March 28, 1893	£6,200,000	97 miles (London extension)

Subscriptions by one company to the capital of another, usually with a view to gaining control or of purchase, appear at an early stage. The London and Birmingham's Act of 1844 authorising a contribution of £1 million to the Chester and Holyhead has not been surpassed. Except in very early years, abandonments of statutory railways were normally authorised by one of two Parliamentary processes and there appear to be only two cases in which "open" authority was given. The North Yorkshire and Cleveland's Act of 1858 permitted it to abandon mineral branches when the mines were worked out or traffic was being carried at a loss, and the Severn Tunnel Railway Act, 1872, after stipulating that the tunnel portion should first be made, authorised the Board of Trade to issue a warrant for abandonment if it became an engineering failure or if the cost far exceeded the estimate.

The Acts contain much that is of value to the historian, some of it amusing in retrospect, and not a little that tends to awaken sentiment or pathos in the reader. No one can fail to be impressed by the amount of work involved in promotion of railways of which only small parts were actually built and the immense trouble and expense necessary in obtaining a whole series of Acts for lines which, envisaged in a burst of optimism, ended in a seven-section standard Act of Abandonment because the required funds were not forthcoming.

★

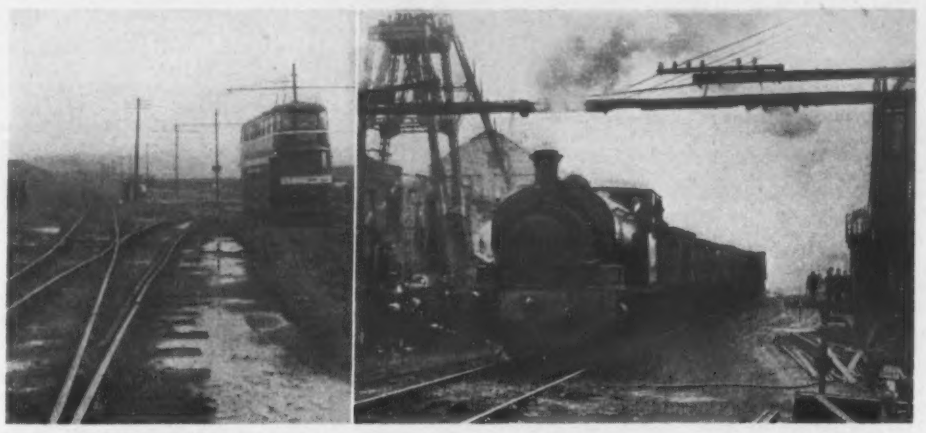
The Institution of Locomotive Engineers held its spring meeting in Ireland and Coras Iompair Eireann provided a display of its latest equipment at Inchicore works. The president-elect, Mr. Robert Arbuthnot (North British Locomotive Company), is seen with the president, Mr. E. S. Cox (B.R. Central Staff) in the cab of the experimental turf-burning locomotive designed by Mr. O. V. Bulleid; they are accompanied by Driver Kealy

TWO CENTURIES AT MIDDLETON

Vicissitudes of Brandling's Line

NEAR END OF USEFUL LIFE

THIS year there falls the 200th anniversary of the passage of the first railway Act, 31 George II, cap. 22, granted June 9, 1758, to Charles Brandling and others "for the better supplying the town and neighbourhood of Leeds, in the the county of York, with coals." Charles Brandling was a Tyneside colliery magnate whose family acquired the Middleton pits near Leeds through marriage in the late 17th century. He realised from experience with his Newcastle collieries, that the disadvantages of a mine which was further from Leeds than those of his competitors could be neutralised, and that he could supply coal more cheaply than any of them, provided he installed a wagonway.



Looking south from Hunslet Carr, with a former London Feltham car on the adjacent Leeds Corporation tramway to Middleton; right, the present "Blenkinsop" working a train of empties through the colliery

Legislation

To do this he required the support of the municipality, whom he won over by a guarantee to supply the township with 23,000 tons of coal a year for 60 years at the rate of 50.3d. per ton. This was about one-third lower than the prevailing price level, and it secured him a virtual monopoly which lasted for many years until the Leeds domestic requirements outstripped the source of supply. Although the agreement did not grant exclusive rights, it was effective enough to stir up some hostility. It was the need for security to fulfil the 60-year contract which caused him to seek the protection of an Act of Parliament which specifically stated that it was "for establishing Agreements between Charles Brandling Esq., and other persons, Proprietors of Lands."

Settling Property Rights

Although as in previous privately-negotiated wagonway arrangements the other property owners were no doubt agreeable, some had a limited and not an absolute interest "and may be under other disabilities to assume to the said Charles Brandling and his assigns the enjoyment of the said Powers, Liberties and Privileges necessary to render the said Agreement effectual"—hence the application for Parliamentary authority.

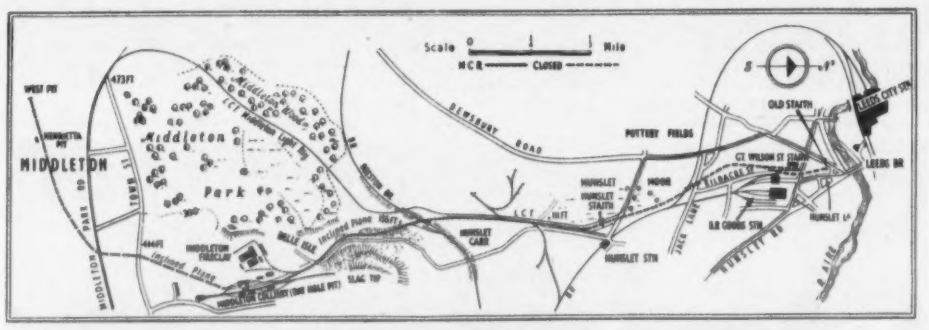
Within a decade of the passing of the Act Middleton's output had doubled, although the pit-head prices remained unaltered. It was entirely a matter of lower transport costs, with which other collieries dependent on navigational and turnpike tolls could not compete. Subsequently, however, in 1779, 1793 and 1803 further Acts were obtained which did advance the pit-head price of Middleton coal to over 7s. a ton in order to keep pace with rising costs, and increased the annual tonnage to 46,000—a figure which nevertheless soon fell far short of the local demand.

After 1814 the output declined, and thereafter remained at about 70,000 tons, whereas the local demand rose from an estimated 250,000 in 1829 to 575,000 tons in 1853. A reason for this was that the initial advantage was lost when other competitors were able to overcome their transport difficulties—although the working of part of the line with steam power from 1812 onwards, indicates that the Middleton management was still anxious to retain the initiative.

Gauge of 4 ft. 1 in.

The wagonway, which from 1758 gave Leeds the substantial benefit of cheap coal, was generally referred to as Brandling's Railway. In its original form it was in most respects very similar to those which already existed in Northumberland. The gauge was 4 ft. 1 in. and it was formed of wooden rails mounted on longitudinal oak battens tied with cross sleepers 3 ft. apart. The trucks carried 2¼ tons and ran on small broad wheels of beechwood with deep flanges. At an early stage iron rails are referred to.

Between Brandlings Old Staith and the West Pit beyond Middleton, the line had a total length of 3¾ miles, descending in favour of the loaded wagons from an altitude of more than 400 ft. to 95 ft. at the northern end. Actually the rise was not gradual throughout, but was severe in two places which were worked as inclined planes. The most important and less steep of the two extended for 350 yd.



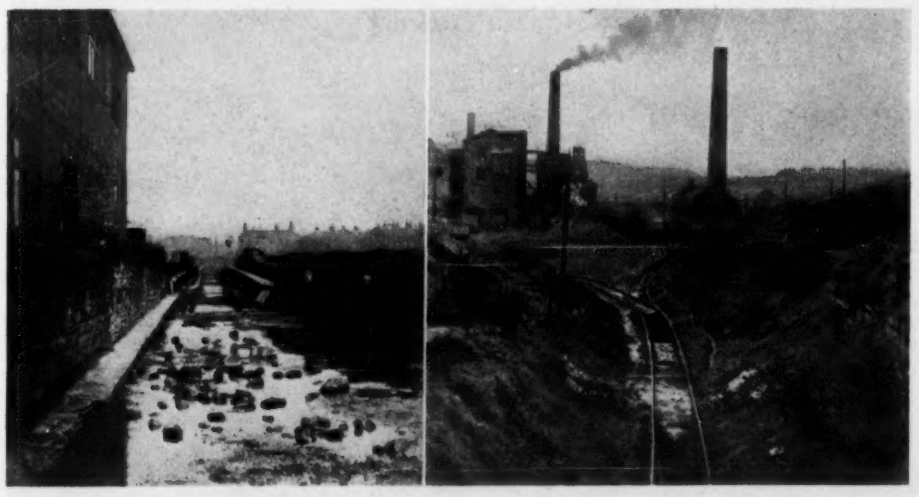
The site of Brandling's wagonway and the present Middleton Colliery railway

between Belle-Isle and Hunslet Carr, and was known as "The Run." It was worked by a 1,000-ft. rope controlled by a 16-ft. brake drum. The descending loaded wagons drew up the empties, a method which appears to have originated here. The gradient was only 1 in 45, and in the last century has been worked by adhesion. The two relatively level sections between Old Staith and Hunslet Carr, and from Belle Isle to Day Hole pit, were worked by steam traction between 1812 and 1835, and employed the rack rail which was the basis of John Blenkinsop's famous patent.

Inclined Plane

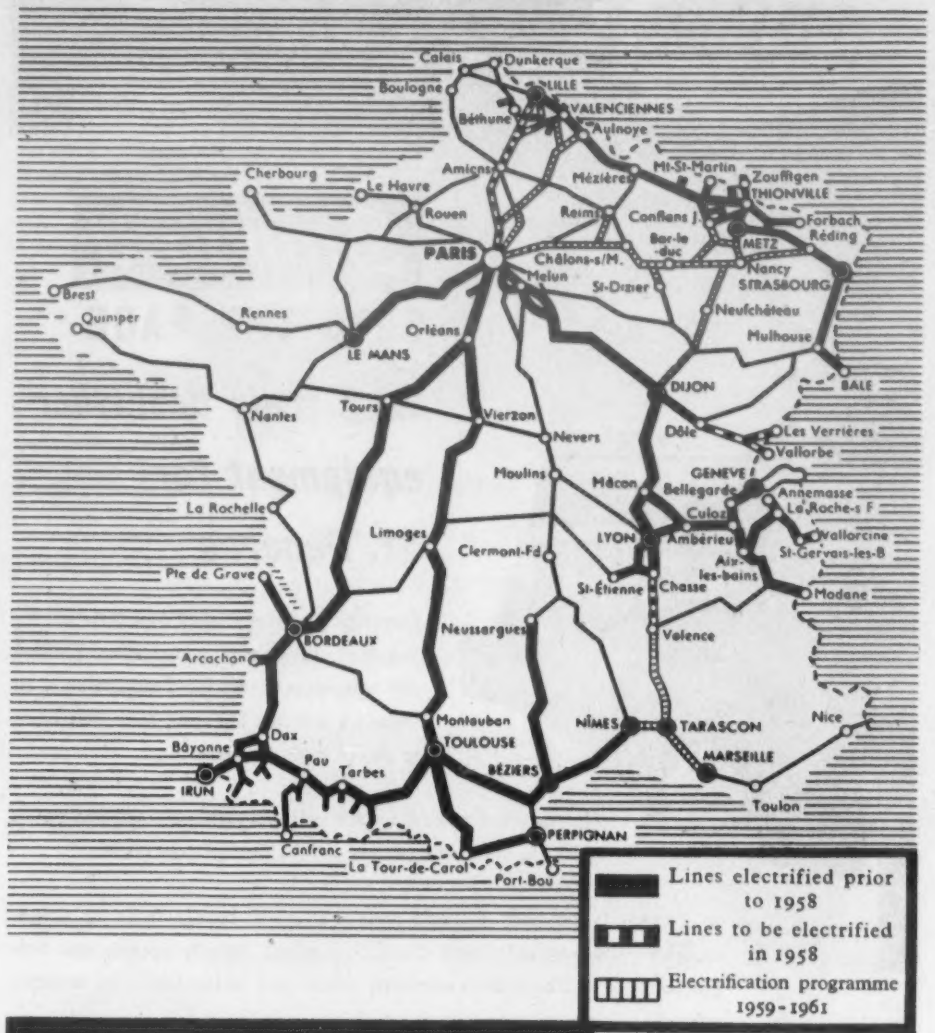
The second inclined plane extended from behind Day Hole pit up to Town Street, and had a rise of rather more than 100 ft., although its length could not have been much more than 400 yd. The preamble of the fourth Act relating to the line, that of March 24, 1803 (43 George III, cap. 12) states that "Charles John Brandling, the present owner of the said coal works has been at a very great expense in sinking new pits, and in laying additional wagonways therefrom." This suggests a reference to the section from Day Hole pit to West pit, and if so, it would date this extension to about 1802. It is shown as extant on the Middleton Estates sales map of 1853, but was later abandoned when the pits closed, and what evidence remained of it in recent times must now lie buried beneath the Middleton Housing Estate of Leeds Corporation.

(To be continued)



Brandling's railway today: Scene of dereliction looking south from Jack Lane, and, right, a view of Middleton Colliery looking north from the end of the line

ELECTRIC TRACTION IN FRANCE



FRENCH RAILWAYS 179 PICCADILLY LONDON, W.1

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COMPANY MEETING

BEYER, PEACOCK AND CO., LIMITED

(Locomotive Builders and General Engineers)

MR. HAROLD WILMOT'S STATEMENT

THE annual general meeting of Beyer, Peacock & Co., Limited, was held on May 20 in London, Mr. Harold Wilmot, C.B.E. (Chairman and Managing Director) presiding.

In the course of his review the Chairman said that the position of the Group at 31st December, 1957, continued to be one of financial strength and liquidity and the operating results for 1957 were closely in line with the forecast made last year.

Referring to new products, the Chairman said that during the year the Company had developed some new products and they continued to improve their existing range. He said that in order that the Company should have an interest in all forms of railway motive power a new Company was recently formed—Beyer Peacock (Hymek) Limited. In that Company they held half the equity, the other half being held by Armstrong Siddeley Development Company.

The Chairman continued: Demand for our agricultural equipment products continues to expand and sales are now at very satisfactory levels.

Extensions of the Group

The Chairman said that during 1957 the Board made a bid for the shares of the Anti-Attrition Metal Company, Ltd. The result was that the Company now held 87½ per cent of the equity of that business which would add to the variety of the Group's products.

He said that some further extensions of the Group were in contemplation. Their continued policy was to broaden the basis of operation in a logical way so as to avoid, if possible, the more severe effects of demand fluctuations in any one product.

Regarding future prospects, the Chairman said: In the absence of some fairly quick improvement in world conditions it may well, for a period, be impossible to maintain total turnover on the scale of recent years.

The report and accounts were adopted and the proposed final dividend of 6 per cent, plus a bonus of 6 per cent, making 16 per cent, less income tax, for the year, was approved.

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LETTERS TO THE EDITOR

Closing of Branch Lines

SIR,—It was with some disquiet that I read in your issue of May 3 an account of the attitude of consultative committees with regard to the closing of unremunerative branch lines. The implication was that any branch line which lost money was against the public interest, inasmuch as it was subsidised by more profitable services, and was thereby putting an unnecessary burden on the public.

But against this there must be taken into account any hardship felt by small sections of the public. Where alternative facilities exist, there can be little argument for the retention of an unremunerative branch line, but if the public is being deprived of its sole means of public transport, then the consultative committees should consider fully whether there is an alternative to complete closure.

The larger omnibus companies, whether nationalised or not, must pay their way. Yet they are supporting unremunerative rural services which means that anything up to 60 per cent of their total mileage is operated at a loss. The British Transport Commission has a virtual monopoly of rail services, and must endeavour to meet reasonable demands.

If the Commission wishes to close a line, then the facts should be laid before the public. The public is entitled to ask: (1) Are services sufficiently publicised locally? Publicity costs are not always inexpensive, yet wisely used, they can reap benefits. Moreover, energetic stationmasters, having few trains to deal with, are in a position to discover the requirements of the neighbouring communities; (2) Could the services be operated more efficiently?

Before any branch line is closed, an effort should be made to provide a better-timed service, with a view to catering for schools and factories near to stations and also for passengers wishing to change at terminal points for main-line connections. To my mind, this has not been done as a general rule, and I would suggest that in future the consultative committees, as public representatives, should attempt to discover what percentage of lost revenue might be regained if more realistic timetables were formulated for branch lines due for closure.—Yours faithfully,

R. B. MEDLEY.

54 Granville Street, Barnsley.

Holiday Travel and Hotels

SIR,—We understand that British Railways are still losing money on both passenger and goods services, but in order to attract more people to travel by train, they are once again issuing second-class return tickets mid-week, at a reduced fare. Whilst this appears to be a very sensible attraction, and also the means of spreading the load of passengers away from the weekend rush, it has one unfortunate aspect, and this is that unless one is prepared to spend their holidays in some high-class hotel, which caters for day-to-day guests, the usual seaside residential hotels will not accept bookings mid-week.

It seems to me, therefore, that as British Railways are members of the Travel Association, their first job should have been to negotiate with the hotels associations in order to bring them into line with the mid-week travelling. Perhaps this is a matter that has not been altogether overlooked, but one on which possibly your readers would like to hear more, as not only administrative and salaried employees are now concerned with mid-week travelling, but also there are a large number of manufacturers whose production period ends mid-week and whose wage-earning employees could also take advantage of this concession.—Yours faithfully,

H. HODSON, M.Inst.T.

Hull.

B.R. Battery Railcar

SIR,—With reference to the description in your issue of April 12 of the prototype battery cars for the Scottish Region, it would appear that the charging arrangements at terminals could be simplified considerably. In place of the plug-in jumper cables, which require interlocking, both to ensure that the train cannot be moved while they are inserted, and that they cannot be withdrawn when carrying current, the circuit between the stationary charging plant and the train batteries could be completed by having short lengths of current rail at the charging points, to engage with current collector shoes on the cars.

To commence charging, the driver would throw a changeover switch from motoring to charging when the train stopped, and then to motoring before leaving. Full safety could thus be ensured in a simple manner, and avoid the inconvenience of handling trailing power jumpers.—Yours faithfully,

D. T. CATLING.

Burnham, Bucks.

Stock for the Chamonix Line

SIR,—The new S.N.C.F. metre-gauge electric stock for the Chamonix line which you describe in your issue of May 10 is certainly long overdue from the point of view of passenger comfort. The existing stock, which it is to replace, is probably the oldest working multiple-unit electric stock in the world.

One small correction to your interesting description of the working of the line is called for in that, for the whole of last year's summer service, there was a through working by a Swiss Martigny—Chatelard set from Martigny through to Chamonix and back. Oddly enough this through working was duly advertised as such in the S.N.C.F. timetables but not in the Swiss timetables.

This S.N.C.F. line and the Swiss Martigny—Chatelard line between them provide what must be the tightest cross-frontier connections ever scheduled. On the basis of last year's summer timetables no fewer than three services had only two minutes allowed between the arrival of the French train at Vallorcine and the departure of the connecting Swiss train and during that time the passengers had to detrain, pass through both passport control offices and the customs and then entrain. The schedule was very seldom kept but one wishes that some other cross-frontier schedules elsewhere could be even half so ambitious!—Yours faithfully,

E. M. SANDERS.

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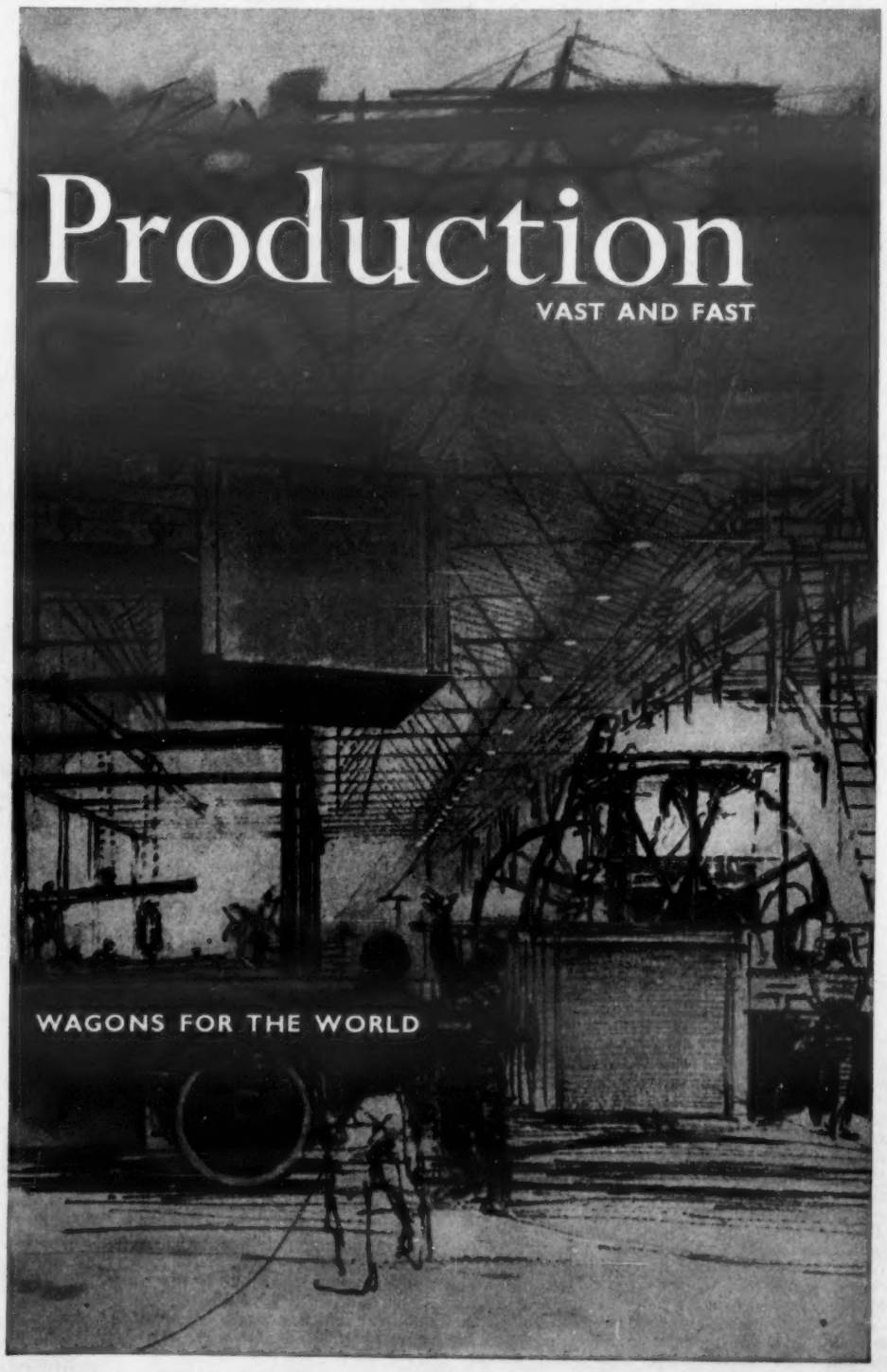

PROGRESS AT PORTMADOC

Festiniog Line Reopened to Tan-y-Bwlch

LESS than three years ago, on July 23, 1955, the reconstituted Festiniog Railway Company commenced its first public train service between Portmadoc Harbour and Boston Lodge Halt. During the same year the Central Electricity Authority obtained powers under the North Wales Hydro-Electric Power Act, 1955, to proceed with its Festiniog Pumped Storage scheme, which included the construction of a reservoir over part of the railway line between the Moelwyn Tunnel and Tan-y-Grisiau station.

Thus the ultimate prospect of getting the entire line reopened seemed hopeless, although it was realised that a claim for compensation might cover the cost of an alternative route. At that time, however, this consideration was a less urgent matter than getting the line reopened as far as Ddualit—a distance of 9¼ miles from Portmadoc. In 1955 even this objective seemed a long way off; but nothing succeeds like success, and within three seasons traffic increased from 11,000 to 55,000 passenger journeys in 1957. This encouraging evidence of a real public demand was the all clear for a great drive to reopen up to Tan-y-Bwlch for the 1958 season, and to reach Ddualit by the spring of 1959. The prudence of treating this task as an absolute priority is no doubt based on the reasoning that a longer journey will provide more revenue, and perhaps even more important, it will establish very definitely that the claim for compensation from the C.E.A. is a matter of urgent necessity, and not just something for nothing.

Obviously there is a serious case for getting through to Blaenau, since this will re-establish the old through link between Portmadoc and the resorts on the North Welsh Coast. It is only necessary to glance at a railway map of North Wales to realise that the Festiniog is the missing link in what is otherwise a perfect circular tourist route, whose completion would be of real benefit to British Railways, Crosville Motor Services, and all those who cater for the tourist trade at Portmadoc and Blaenau Festiniog.

This season the service will run to Tan-y-Bwlch and the formal inauguration by Sir Reginald Wilson, in the capacity of president of the Institute of Transport, was to take place on May 23. The latest terminus is finely situated in a vast amphitheatre of mountains, high above the oak forest that encircles the sleeping waters of Llyn Mair. Scenically it is ideal, and one imagines that now the railway has reopened it will become immensely popular. One effect of increasing the route mileage from 3¼ to 7¼ in a single year, is that there is now a dearth of suitable passenger rolling stock. Since 1955 the number of bogie vehicles has been increased from two to seven, with a total capacity of rather less than 300 passengers.

Special train conveying 270 passengers at Tan-y-Bwlch on April 26, the day of the annual meeting of the Festiniog Railway Society

Observation saloon rebuilt from ordinary stock and fitted with upholstered seats from Mersey Railway carriages for the world's oldest narrow-gauge railway

I.T.D. Range Extended

NEW PALLET AND FORK TRUCKS

OPPORTUNITY was taken by I.T.D., Limited, on its stand at the Mechanical Handling Exhibition to lift the veil on its plans to use Clark truck patents, designs and technical experience on products marketed in this country for home and export fields. It will be recalled that the Clark Equipment International Company of America last year became an equal partner with the Austin Motor Co., Limited, and Crompton Parkinson, Limited, in I.T.D. and the last-named has access to Clark designs, patents and experience. The agreement provides that British-made trucks embodying Clark designs may be sold in Europe and all over the world through a distributorship network with outlets in 70 countries. Other European licensees have similar access to these markets and accordingly, in Europe at least, there is as it were a private Common Market in operation already.

Clark Trucks

Production of Clark equipment at the enlarged Hall Green, Birmingham, factory of I.T.D. will initially be focused on the Powrworker range of pedestrian-controlled electric fork-lift, pallet and platform trucks capable of handling loads from 1,500 lb. to 6,000 lb. There are three basic models, the smallest of which, the Powrworker three-wheeled 1,500-lb. (at 24-in load centre) pedestrian fork-lift truck extends the I.T.D. range downwards in terms of power trucks. Overall length, including 30-in. forks, is 91⅛ in. and turning radius 53¾ in. and travelling speed load 2.5 m.p.h. Similar 2,500-lb. trucks have an overall length of 98⅛ in. and a turning radius of 60¼ in.

Two models of the Powrworker pallet truck and of the low-lift platform truck are also to be marketed, each with capacities of 4,000 lb. and 6,000 lb. Length behind the pallet fingers is 26 in. A 10,000-lb. battery-electric fork-lift truck from the American Clark factory was also exhibited at Earls Court in order to gauge the potential market in Europe, also a 4,400-lb. model CY40 from the West German licensee, Ruhr Intrans. This diesel-powered machine was also exhibited to test market possibilities. I.T.D. believes the battery-electric fork truck has been steadily supplanting the diesel or petrol unit over a period of years, except where round-the-clock working over rough terrain with testing gradients is required. As evidence of its faith in the future of the electric truck I.T.D. has in fact produced an electric model 624E 6,000-lb. truck. When fitted with pneumatic tyres it is capable of traversing under full load surfaces which would normally be barred to a truck of this type and capacity. Weight in working order, with battery, is approximately 9,980 lb. and speed under full load 4.75 m.p.h.

The corresponding 624D diesel truck, powered by the B.M.C. 3.4-litre engine, incorporates Stacamatic transmission. The two forward and single reverse speeds are selected by steering column-mounted lever. Engagement is via individual multi-plate clutches, normally spring-loaded in the neutral position. Gear selection permits oil pressure to be built up in a series of hydraulic pistons disposed radially to a pressure plate in each clutch assembly. An accelerator valve controls actual engagement in relation to engine speed and output requirements. The load capacity of this truck is 6,000 lb. on pneumatic or 7,000 lb. on cushion tyres.

I.T.D. participated in the commercial vehicle show organised by the Austin company at its Longbridge works on May 19. Outstanding in the demonstrations staged on that occasion was the Ranger, a cross-country fork truck of entirely new conception, developed by the Clark company for the U.S. Army. This is a four-wheel-driving and steering truck mounted on cross-country tractor-type wheels all round and powered by a 95 b.h.p. engine. Capacity is 3½-4 tons. The truck can move crabwise if desired. The forks, which include a side-shift mechanism, are carried on a hydraulic elevating jib and can be maintained in the horizontal plane irrespective of the angle at which the truck may be lying. They can also be tilted to cradle the load across rough terrain.

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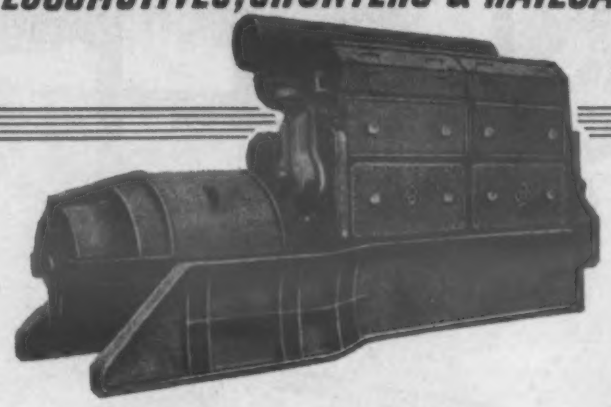

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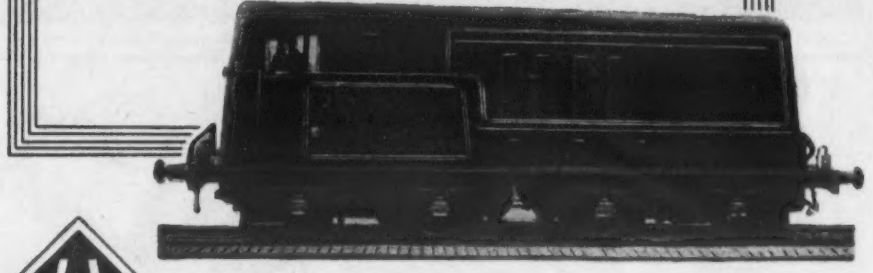

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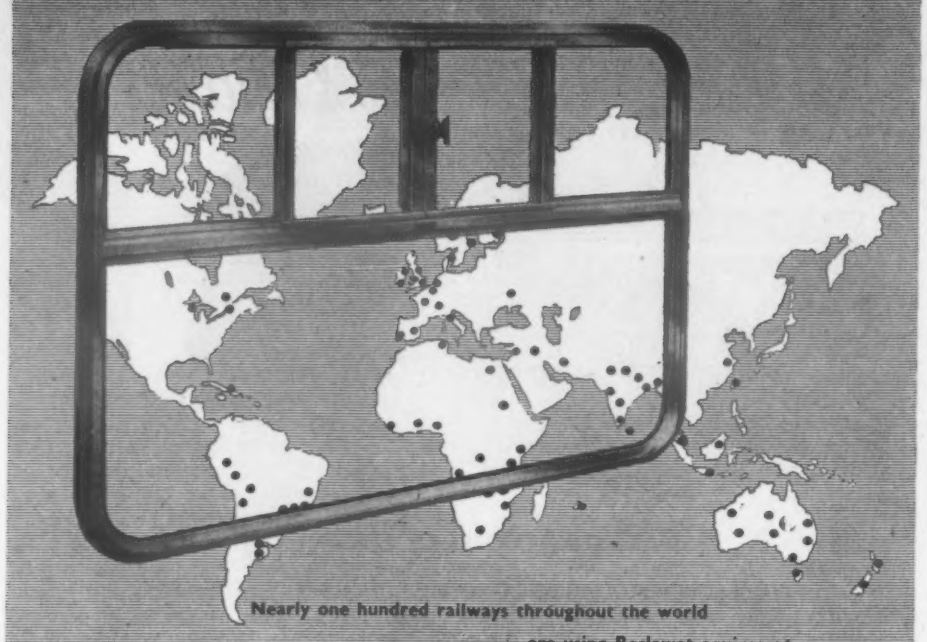

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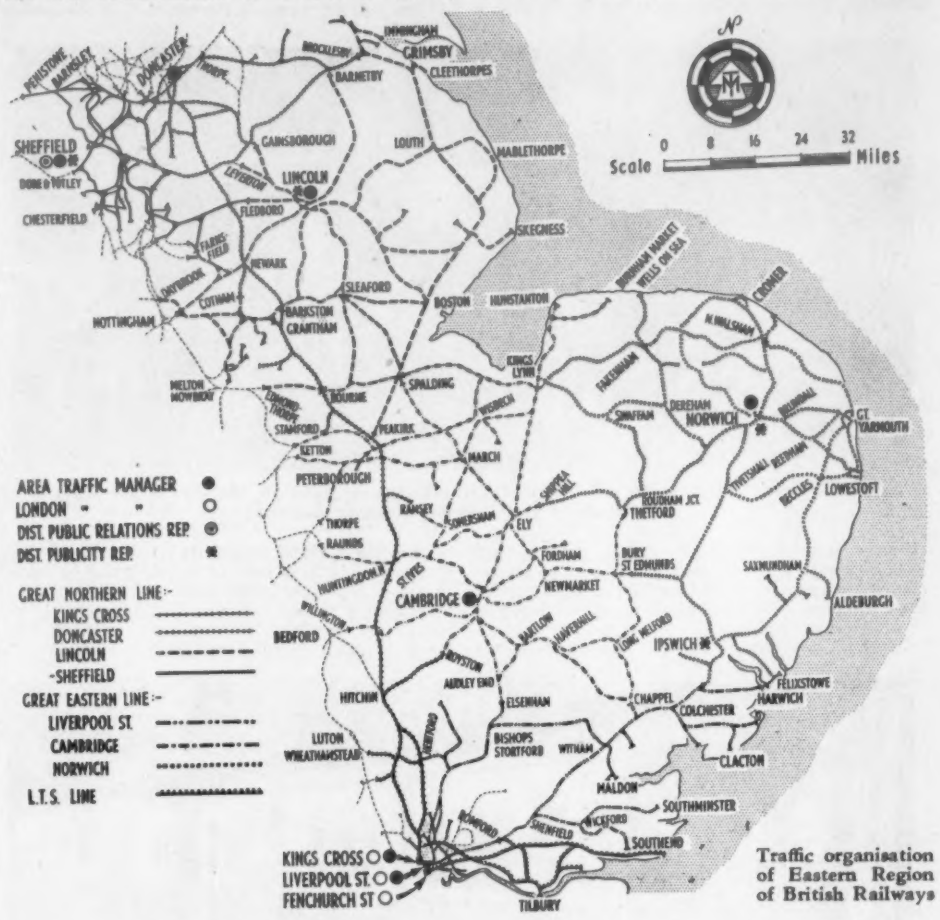
RAILWAY ORGANISATION

Eastern Region Commercial Arrangements

DESPITE many admirable features, railway commercial organisation in this country evolved in the 118 years between the opening of the Liverpool and Manchester Railway and the consummation of a national railway railways to heavily increased competition, but it recognised probably for the first time, that a more personal service to the public, whether traders or passengers, was desirable and provision was made for this to be accomplished through decentralisation.



Traffic organisation of Eastern Region of British Railways

The first of the regions to take advantage of this was the Eastern and from the end of 1957 its scheme has been in full practice. The Region has been divided, as shown on the map, into three traffic areas, the first of which to be brought into operation was that of the London, Tilbury and Southend Line. There followed, on December 30 last, the Great Eastern and Great Northern Line organisations. The respective line traffic managers are Mr. J. W. Dedman for the London, Tilbury and Southend Line; Mr. W. G. Thorpe, Great Eastern, and Mr. G. F. Fiennes, Great Northern.

The London, Tilbury and Southend Line is small enough to operate as a unit, but the other two are each divided into a number of districts. Booklets have been issued to traders dealing with the organisation of the traffic manager at Liverpool Street, Norwich and Cambridge for the Great Eastern Line, for Kings Cross on the Great Northern Line; and for the London area as a whole. We supplement this by listing the organisation of the other traffic managers on the Great Northern Line and the officers of the London, Tilbury and Southend Line. The new organisation gives greater authority and responsibility to the local officers and work previously spread over a number of departments is combined under the traffic manager in one organisation, enabling business negotiations to be accelerated.

GREAT NORTHERN LINE

(a) Doncaster		
Traffic Manager	E. J. Stephens	Doncaster 4031, Ext. 5
District Commercial Officer	S. C. Webb	Doncaster 4031, Ext. 83
District Operating Superintendent	R. Lawrence	Doncaster 4031, Ext. 70
District Motive Power Officer	S. Kelsey	Doncaster 4031, Ext. 1
(b) Lincoln		
Traffic Manager	H. W. Graham	Lincoln 11352, Ext. 2
District Commercial Officer	C. A. M. Peaty	Lincoln 11352, Ext. 5
District Operating Superintendent	C. Hartman	Lincoln 11352, Ext. 3
District Motive Power Officer	W. D. Dixon	Lincoln 11352, Ext. 4
(c) Sheffield		
Traffic Manager	R. B. Temple	Sheffield 29611, Ext. 1
District Commercial Officer	E. R. Williams, M.B.E.	Sheffield 29611, Ext. 3
District Operating Superintendent (Sheffield)	E. S. Gellatly	Sheffield 25167, Ext. 1
District Operating Superintendent (Rotherham)	S. Lee	Rotherham 2101, Ext. 1
District Motive Power Officer	J. Blundell	Sheffield 25167, Ext. 24

(d)	*Doncaster 4031 Ext:*	*Lincoln 11352 Ext:*	*Sheffield 29011 Ext:*
Sales and Development	121/135	6	17
Sales and Traffic Development	122	6	18
Excursions and Party Travel	127	29	24
Rates and Fares Passenger and Freight	126	7	30
Accounts	129	64	Sheffield 24001 Ext. 42
Cartage and Terminal Working	133	12	13
Passenger Train Service	136	22	Rotherham 2101 for L.M. Sheffield 25167 Ext. 11, for G.C.
Wagon Supply	139	19	Sheffield 25167 Ext. 16
Claims	M/6	52	Sheffield 23031 Ext. 18

LONDON, TILBURY AND SOUTHEND LINE

Line Traffic Manager, J. W. Dedman	Royal 4591	Ext. 1
Commercial Superintendent, B. Seymour	" "	Ext. 3
Movement Superintendent, R. Arnott	" "	Ext. 4
Motive Power Officer, J. L. Simpson	" "	Ext. 5
Sales Assistants	" "	Exts. 126/127
Sales and Development Section	" "	Ext. 128
Excursions and Party Travel	" "	Ext. 129
Rates and Fares	" "	Exts. 130/131
Accounts	" "	Ext. 134
Cartage and Terminal Working	" "	Ext. 37
Passenger Train Service	" "	Ext. 32
Claims	" "	Ext. 21

system in such a way that the responsible railway officers were in general much more remote from traders than their counterparts in road haulage. The Transport Act of 1953 not only exposed the

Railways Still Essential

(Continued from page 3)

medium distances and also over short distances between points that are themselves rail-served; heavy seasonal or intermittent movements like the sugar beet harvest, or concentrated clearance of ports.

It was for objectives such as these that the Commission prepared, and the Government endorsed, their Railway Modernisation Plan of 1955. This plan provides for the intensive deployment of the most modern technical resources in a purposeful concentration upon those commercial traffics for which railways are the most suitable and most economic agency. The White Paper of 1956, headed "Proposals for the Railways," which dealt with the financial problems arising during the period of the execution of the plan, further emphasised the importance of streamlining the railway structure.

This streamlining process was begun by the former railway companies and has been continued since nationalisation, as the traffics carried by the less used services decreased, while the cost of working them increased. The process of shedding these unprofitable and largely unwanted facilities has been, however, a painfully slow one, because it has proved difficult to convince the public that British Railways are engaged in a highly competitive business, have an obligation to pay their way and must be permitted to cut their losses. There is also an element of sentiment about closing down an unwanted railway, which never seems to retard the closing of an unprofitable newspaper or cinema.

The inevitable process of contracting the railway system into a smaller but healthier body has now been given a healthy impetus by recent circumstances. I will not go over again the whole ground of the recent settlement on wages and salaries. It has been a subject of intense national interest and its circumstances are fairly well known. Very shortly, the Government have agreed to an important restoration of capital investment for railway modernisation (which it had been necessary to reduce in the interests of national economy), and to relieve the Commission of certain statutory payments for the maintenance of bridges and roads over railways, while the Commission, with the support of the trade unions, have undertaken to make such alterations in their services and economies as are necessary to find the money. The Commission will fulfil their part of the undertaking. There are people who say that the railway trade unions have failed to honour undertakings given in the past: such statements are not justified and do not help.

The somewhat unusual outcome of this wages settlement is that it enables the Commission to go ahead more rapidly with plans, both of modernisation and of rationalisation, than they had been able to do before.

No highly developed country, such as ours, can afford to be without a modern railway system. People who talk about railways being out of date are talking nonsense. But a railway system which tries to give service to everyone everywhere and at any time is not a modern system.

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BRITISH RAILWAYS

BALANCE OF TRANSPORT COMPONENTS

Air—Road—Rail—Water

*By C. E. R. SHERRINGTON, O.B.E., M.C., M.A., M.Inst.T.**
Director of Research Information Division, B.T.C.

OUR Institute of Transport has always stood as representative of all organised means of movement by air, rail, road and water, the last named embracing both ocean and inland. Its council members have been representative of all these forms of transport; many of its presidential addresses have dealt with the problem of interlocking the sometimes highly conflicting interests of them all. As each decade passes the desirability of co-ordination, integration and correlation have been stressed time and again. In 1947, in Britain, legislation imposed one method to achieve the aim; in 1953 legislation amended the method, but hardly the aim. The thought has often crossed my mind as to whether the interests of the public, as represented by the nation, and its trading community have been given the attention which is their due.

Work of Transport

The modern world, and indeed the standard of life, is based on the fabric of specialisation. Excluding war years, the small child in Glasgow can legitimately expect a banana from Honduras, an orange from Spain and some butter from New Zealand or Denmark to spread on the bread baked with flour from wheat grown in Oklahoma and Alberta. Workington and Port Talbot docks receive ore from Lulea or Narvik, from Africa, from Huelva and from Labrador. Transport has brought the ends of the world together; each successive transport invention has lowered the cost per ton-mile or per passenger-mile, or should have done so. But has it in fact?

There is evidence, undoubtedly, in many countries of an uprise of consumer resistance, reflected in reduced travel and, even more serious, in decreased movement of commodities, in fact a fall in trade, bringing in its train reduced production. The trend is difficult to assess in terms of passenger movement owing to the ever widening ownership of private cars, but in many major industrialised countries the volume of public service passenger movement, by rail and by road, has fallen of late and is still falling. But price is not the only criterion; it is in fact inextricably linked with service offered, and efficacy of service should take into consideration reliability, regularity, punctuality and frequency, together with courtesy and comfort in passenger service.

Competition

The internal combustion engine has permitted the average family to own a car, in North America often two and sometimes three cars, and a commercial concern can have its own motor transport virtually free of restrictions, other than in regard to safety, provided it carries only its own goods. Known to us as the C-licence, the system of private carrier has its counterpart in every country. Thus the availability of a family owned means of movement, and its counterpart in the commercial sphere, has forced on the public carrier, whether passenger or freight by rail or by road, a form of competition which it must face and which may undermine the financial structure of many a nation's public transport.

Much has been written, and more has been said, in Europe and in the United States of the growing share in total freight movements of the private carrier. In the United States it must be remembered that the public carrier by road is strictly regulated in respect of rights to operate, rates charged, etc., when engaged in interstate traffic, by the Interstate Commerce Commission, a Federal body. Last January, however, two organisations representing some 4,700 motor carriers of exempt commodities placed a plea before Congress requesting that the Interstate Commerce Act be amended to bring such carriers under the jurisdiction of the Commission. A request for regulation is unusual.

An interesting chart recently published set out, for American conditions, the railway's out-of-pocket costs per ton for a specific commodity carried in 25-ton lots and related it to the so-called optimum trucking cost per ton and the existing rail revenue per ton. The graph showed that the railway could not compete up to distances of 500 miles, even though the rail cost was less than the truck cost over all this mileage; from 500 on to 3,000 miles the rail advantage was clearly defined. It is, in part, terminal costs which have placed the railways at a disadvantage, since the shorter the haul the greater is the proportion of these terminal costs to the total movement cost. British railways are in a stronger position by their long-time ownership of large motor fleets for collection and delivery servcie.

Total Traffic Increased

In terms of inter-city freight traffic, based on ton-mileage, the share of the American railroads in 1956 had dropped to 48 per cent, the balance being made up of 19 per cent by road, 17 per cent by pipelines and 16 per cent by waterways. Airway freight traffic was still less than 1 per cent. Whereas the American railways' share in the total volume of freight traffic has been falling during the last decade, thanks to the increase in population and industrial production, railway freight traffics have risen by 73 per cent comparing 1956 with 1940 (not a war year in the United States).

Western European railways cannot expect to derive similar traffic increases from a rise in population or production. But, regarding this aspect of the problem under survey, it may be appropriate to point out that traffic volume is not static. Transport facilities create traffic volume in relation to their efficiency, that efficiency being measured by price, by good service, assessed for passengers in terms of courtesy, comfort, speed, frequency, regularity, punctuality and so forth.

Begetting Traffic

The theory, resulting from the period of the industrial revolution, that there is a wages fund or, again, a work fund of fixed amount and the shares to be divided, between labour, capital and natural resources, in terms respectively of wages and salaries, interest, etc., dies hard. Equally difficult to inter is the concept that gross revenues from transport services are a fixed amount, to be divided like a sugar cake into appropriate slices. With lower fares and rates additional traffic will be induced, especially in the categories of elastic demand, and the cake will be larger and the slices bigger; it may even be iced.

That the potential of traffic volume is not fixed is well exemplified by civil aviation results. Taking as an example transatlantic air services one finds that they have not reduced the passenger travel by sea; indeed, if one requires a transatlantic passage by liner in the summer it is as difficult to obtain as it was in 1922 or 1938. In spite of an intensive air service to Paris, to Brussels or to Milan, Nice and Rome, cross-Channel and North Sea services carry more passengers annually than they did prewar. A new facility begets traffic, though the character of the existing service may change.

British Policy

British policy today may be characterised as allowing fair rein to competition; clearly the railways enjoy a measure of freedom in rate quotation, probably unique in the world and certainly operative for the first time in this island. Some 25 years ago they were allowed to arrange "agreed charges," a system which has now been developed extensively in Canada but which has not yet been permitted in the United States. The new charging system only became operative in Britain last July and the months elapsed since then do not permit as yet of any correct assessment of the results, but it is clear, after nine months, that this freedom in rate quotation has not so far stemmed the drift of merchandise movement to road haulage.

Of recent years the similar teachings of Hadley and Acworth have been pushed aside in favour of a cost basis coupled with greater emphasis on loadability; by this means railway charges could be more closely approximated to road charges, which are primarily based on cost per ton per mile and take comparatively little notice of inherent commodity value, which played a major part in the previous customary rate structure. But departure from the fundamental principles stated by Hadley and Acworth has not been effected with impunity. To base rates preeminently on costs is by no means easy, at any rate in the case of railways, whilst consumer resistance might not have been experienced so severely if greater heed had been paid to the principle that revenue will not be derived from "charges which the traffic will not bear."

No Monopolies

Railways today hold no monopolies; it is doubtful if they ever held them in Britain with no city more than 60 miles from the sea coast and such centres as Manchester and Birmingham served by canals. Road transport has merely made possible the spread of industry to any area, whereas previously it tended to concentrate where coastwise shipping or inland waterways could offer an alternative service.

Road transport rates, thanks to the small units, can be closely related to costs per ton; with rail rates the costing work is complex and may require an army of costers, who in themselves incur serious costs. What is remarkable is that so many road haulage rates are based upon the rail rate structure; this is notably the case in the United States, where road haulage rates have to be filed by public carriers.

In Britain internal air traffic, owing to our comparatively short distances and our unfavourable climate, though highly competitive on London-Scottish and certain other routes, is not a major problem; on Anglo-Continental routes it has largely built its own clientele.

Under the Transport Act 1953 coastwise shipping is afforded a measure of protection, though an important section of it is foreign owned and a major portion is ancillary to industries such as oil companies and the national concerns supplying electricity and gas. Within the confines of Britain the problem of balancing the transport components is primarily the relationship of rail and road transport.

Investment

The country is investing heavily, and rightly, in improving both its rail and its road network; well over £100 million on railways this year in the Modernisation Plan and over £80 million on the roads. Our vehicle population approximated 7,500,000 at the close of 1957, of which goods vehicles totalled nearly 1,250,000 and bus, coaches and trolleybuses almost 79,000. But, in contrast to the voluminous published railway statistics, one knows but little of the work accomplished by the road haulage fleets and the public service passenger vehicles as a whole. At long last a survey of goods vehicle usage is being conducted by the Ministry of Transport. It should produce vital data, but it will only be a sample.

But the structure we should be building of a balanced transport system—air, rail, road and water—can hardly be commenced until the foundations are available, and these in terms of data on movement by road are grievously lacking in published form. Even on the railway side there are no figures of gross ton-miles, which so many railways overseas have used to advantage.

Data Needed

In the United States there was recently published the distribution by gross weight of motor vehicles using main rural roads; thus the percentage of those of 15 short tons or over rose from 14.8 per cent in 1949 to 21.3 per cent in 1956. Why should we be short of similar data? The American Trucking Association is proposing to publish weekly truck-loading figures, comparable to the railways' car-loading figures, as from next July; it is regarded as a helpful index to business activity. Road haulage rates are on file at the Interstate Commerce Commission and with State Public Utility Commissions.

Comparatively, what has Britain to offer? The only valid figures are the tonnage carried and the vehicle miles loaded and empty of British Road Services vehicles, yet rail data are set out in consummate detail in the B.T.C. *Four-Weekly Statistics* and in its annual report.

* Abstract of paper read before weekend meeting of Humberside Section of Institute of Transport.

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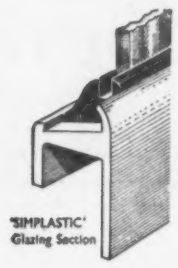

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7,500 SCAMMELL MECHANICAL HORSES serve BRITISH RAILWAYS

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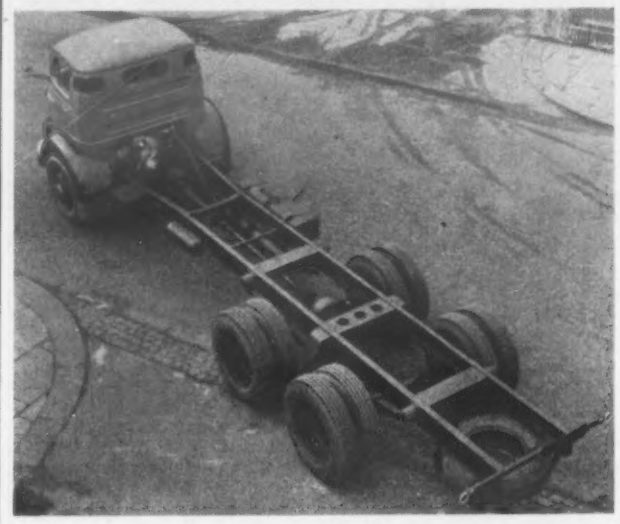
MEDIUM-WEIGHT SIX-WHEELER

Commer-Unipower Chassis For 15 tons Gross

BASED on the established Commer 13 ft. 6 in. wheelbase 7-tonner, a new medium-capacity trailing-axle six-wheeled chassis has been introduced by Commer Cars, Limited, Luton. The design has resulted from collaboration between the company and Universal Power Drives, Limited, and was set in train in response to a growing demand for this class of vehicle. The chassis is powered by the well-known Rootes



The new Commer-Unipower trailing axle six-wheeler for 15 tons gross

two-stroke diesel engine, which has a gross rating of 105 b.h.p. at 2,400 r.p.m., driving through a 13-in. dia. single dryplate clutch, four-speed synchromesh gearbox and spiral bevel rear axle with a ratio of 5.857 to 1. The Unipower trailing rear axle includes Commer components as far as possible to facilitate spares service.

Frame

The chassis frame is of high-duty steel having a maximum channel section of $8\frac{9}{16}$ in. by 7/32 in., with a top flange $2\frac{9}{16}$ in. wide and a bottom flange 3 in. wide. The rear taper portion has been removed from the original frame side-members and an extension of suitable length to allow a maximum legal body space has been substituted. The extension has been butt welded to the original frame and a reinforcing flitch of L section inserted in the sidemembers extending to a position adjacent to the front-spring rear hanger bracket. The reinforcing flitches are tapered in both planes at the ends to avoid any sudden change in section and consequent concentration of stress under load. Three channel-section crossmembers with boxed ends are fitted where the bogie suspension frame brackets are located on the frame, while uniform strength and rigidity of the complete structure has been obtained by the careful disposition of additional crossmembers.

Suspension

The front suspension embodies reverse-camber semi-elliptic springs of silicon manganese steel 48 in. long and $2\frac{3}{4}$ in. wide. The rear suspension is supported on six frame brackets. The four interchangeable laminated springs of silicon manganese steel have the outer ends connected by spring hanger brackets. The inner ends are connected to a freely swinging rocker beam through spring shackles, the rocker beam oscillating in a sturdy centre bracket. The whole assembly thereby provides three-point suspension on each side of the chassis frame. The rocker beam is so designed that a high proportion of the bogie weight is imposed on the driving axle, hence providing good traction over bad surfaces. Each spring is 47 in. long and 3 in. wide.

Brakes

The chassis has hydraulic two-leading-shoe brakes on all wheels assisted by a vacuum-operated servo unit, providing a total lining area of 912 sq. in. Standard-type equipment is 8.25-20 12-ply for a maximum gross vehicle weight of 15 tons. This enables the vehicle to carry a genuine 10-ton payload when equipped with a 21 ft. 6 in. platform body. Principal dimensions are wheelbase $187\frac{1}{2}$ in., overall width 88 in. ($86\frac{1}{2}$ in. over rear tyres), overall length $327\frac{1}{8}$ in. and frame height over bogie (laden) $31\frac{1}{16}$ in. The turning circle is 71 ft. and the appropriate dry chassis weight is 76 cwt. The cab adds about $3\frac{1}{4}$ cwt. and fuel, water and spare wheel a further $4\frac{1}{4}$ cwt., giving a kerb weight for chassis and cab of approximately $83\frac{1}{2}$ cwt.

Available in either chassis or chassis-cab form, there is a full range of optional equipment, including special tyre equipment, flashing indicators, front towing loops, extra windtone horn, sun visors, power take-off, front hydraulic dampers, two-speed axle, overdrive, power tyre pump, ball-bearing clutch throwout, power-assisted steering, engine revolution counter, air-hydraulic brakes and a heater.

Work commenced in March on a new factory in Glasgow that will enable British Oxygen Gases, Limited, to meet increased demands for its industrial gases in Scotland. The new 25-acre site is near the company's existing factory at Polmadie and a compressing station, stores and a liquid-oxygen plant will be erected there.

Automatic Telephone and Electric Co., Limited, the English Electric Co., Limited, and Ericsson Telephones, Limited, have formed a jointly owned company for the development and manufacture of transistors and other semi-conductor devices. The company, to be known as Associated Transistors, Limited, has an authorised capital of £750,000 and is constructing a factory at Ruislip, Middlesex. While the primary purpose of the company is to manufacture switching transistors for the telecommunications requirements of the sponsor companies, it will also manufacture semi-conductor devices of more general application.

IMPROVED ELECTRODES

Two New B.O.G. Types

TO improve the quality of welds made by its Argonarc process, British Oxygen Gases, Limited, has introduced two new types of tungsten electrodes. Under good welding conditions, a tungsten electrode is virtually non-consumable, provided it is chemically pure. Although impurities can bring about a reduction in its melting point and also in its operating life, the addition of small percentages of thorium or zirconium can give superior arc-striking qualities, improved stability at low welding currents and almost total absence of arc wander. One of the new electrodes contains a total of 2 per cent thorium, and the other contains 1 per cent zirconium.

Striking the arc with the new thorium electrode is claimed to be easier than with the previous electrode which contained only 1 per cent of thorium. The electrode also has a higher contamination resistance on both a.c. and d.c. and retains its shape longer before regrinding becomes necessary. The zirconiated electrode is claimed to be of particular value where tungsten contamination of the weld cannot be tolerated. Any inclusions are usually minute and disperse to the edge of the weld pool where they can be removed by surface grinding.

Weetabix, in conjunction with British Railways, has published a range of 40 cardboard cut-out railway models, which will be issued singly in their cereal boxes.

The Michelin Tyre Co, Limited, has opened a new depot at 1 Station Road, Norwich (telephone Norwich 29361). Stocks of all Michelin tyres are held and there is an immediate-delivery service.

The British Aluminium Co., Limited, announces that from March 25, 1958, the Manchester branch sales office was transferred from its previous address to Woolwich House, 59-61 Mosley Street, Manchester, 2. Telephone No. Central 2331.

One of the first British engineering companies to achieve the distinction, Leslie Hartridge, Limited, Buckingham, has appointed selling agents for its diesel engine servicing equipment in Hungary and Yugoslavia after negotiations lasting many months. Initial orders for Hartridge equipment have already been placed and the company considers there is a possibility of a big increase if the British Government can reach agreement with Russia on a relaxation of East-West trade restrictions.

PLASTICS BUS SHELTERS

Practical Longwell Green Unit

EXPERIENCE during the past few years in the development of reinforced plastics for goods and public service vehicle bodywork has enabled Longwell Green Coachworks, Limited, in collaboration with Mr. R. A. Hawkins, general manager, Newport Corporation Transport, to design and produce a practical and attractive plastics bus shelter. The shelter is made in

Longwell Green Coach works plastics bus shelters at Newport, Mon.

5-ft. sections of glass fibre-reinforced Beetle polyester resin. The front panel incorporates two large windows and is colour-impregnated. The roof panel is designed so that it can be cantilevered from the front panel. It is of translucent plastics to make the shelter reasonably light inside and is corrugated for drainage.

The plastics panels are claimed to have a strength equal to that of metal of similar gauge and they are designed to require a minimum of supporting tubular framework, thus keeping down erection costs. Maintenance costs should also be low as the panels do not corrode and require no painting. The panels are easily handled and do not deteriorate in store. The cost is said to be no greater than that of an orthodox shelter. The Beetle polyester resins used in the construction of these shelters is manufactured by B.I.P. Chemicals, Limited, Popes Lane, Oldbury, near Birmingham.

SOCIAL AND PERSONAL

S.M.M.T. President

THE Society of Motor Manufacturers and Traders has elected Mr. Reay Geddes, a managing director of the Dunlop Rubber Co., Limited, a president of the Society for 1958-59 in succession to Mr. A. S. Dick, managing director of the Standard Motor Co., Limited. Mr. Dick now becomes deputy president. Mr. Geddes, a vice-president this year, joined Dunlop in 1935 and was appointed a managing director in 1957. Elected as vice-presidents were Mr. J. M. A. Smith, assistant managing director, Ford Motor Co., Limited, and Mr. M. L. Breeden, joint managing director, Wilmot-Breeden, Limited.

* * *

We regret to record the death at the age of 50 of Mr. E. A. Lawson-Brown, service engineer in the traction department of the British Thomson-Houston Co., Limited, at Rugby since 1951.

* * *

The Mersey Docks and Harbour Board has appointed Mr. J. D. J. Saner, M.C., M.I.C.E., engineer-in-chief in succession to the late Mr. A. B. Porter.

* * *

Mr. W. D. Koster has been appointed to the new post of cargo manager of British Overseas Airways Corporation, responsible directly to the management for all aspects of cargo handling and selling.

* * *

Mr. A. F. Neal, B.Sc.(Eng.), A.M.I.E.E., M.Inst.T., general manager of Manchester Corporation Transport Department, has been nominated vice-president of the Municipal Passenger Transport Association for the year 1958-59.

* * *

The annual dinner of the Institute of Transport next year will be at the Dorchester, London, W.1, on March 20. Arrangements are in hand for a visit of a party of members to Denmark (headquarters Copenhagen) during 1959. The provisional dates selected are June 16-25, 1959.

* * *

Mr. R. N. Ingram, who was last week elected national chairman of the Road Haulage Association, represents the West Midland area of the Association. He was area chairman from 1949 to 1952 and became a national vice-chairman in 1955.

Mr. R. N. Ingram

His business interests embrace motor engineering and works contracting besides haulage. The business of W. R. Ingram, Limited, at Yardley, Birmingham, was founded by his father in 1924 and, with an associated concern, there are about 50 vehicles, 25 excavators, bulldozers and similar equipment. Plant hire was rapidly extended from 1945 onwards. Engineering contracts are now handled by Ingram Construction, Limited; another associated company is Contract Haulage, Limited.

* * *

Mr. W. Curtis Maton, of the Pressed Steel Co., Limited, has been elected president of the Institution of Body Engineers.

* * *

Captain G. J. A. Lumsden, D.S.C., R.N.(Retd.) has joined the staff of Decca Radar, Limited, to lead a new sales division, formed to further the interests of naval customers and promote the sales of naval shipborne radar, coast defence radar of all types and harbour surveillance radars.

I.o.T. Elections

THE election of Major General G. N. Russell, chairman of the board of management, British Road Services, and a member of the Eastern Area Board of the British Transport Commission, as president of the Institute of Transport has already been announced. The following have now been elected vice-presidents:

Mr. David Blee, general manager, London Midland Region, B.R.
Mr. H. Leslie Bowes, managing director, Pacific Steam Navigation Company.
Mr. E. R. L. Fitzpayne, general manager, Glasgow Corporation Transport Department.
Mr. A. S. C. Hulton, managing director, Shell Tankers, Limited.
General Sir Brian Robertson, chairman, British Transport Commission.
Mr. G. F. Sinclair, member, board of management, British Road Services.
The hon. treasurer is Mr. D. McKenna, assistant general manager, Southern Region, B.R.

Lord Rusholme, a member of the British Transport Commission, has been elected an additional ordinary member of council of the Institute and to fill vacancies on the council which will arise on September 30, the council has nominated:

Messrs. F. C. Asgill (Stephenson Clarke, Limited), H. H. Crow (Crow Carrying Co., Limited), A. A. M. Durrant (chief mechanical engineer—road services, London Transport), G. E. Fiennes (Great Northern line traffic manager, Eastern Region), F. Grundy (chief traffic officer, British Railways Central Staff), D. H. F. Joyce (supplies and transportation manager, Shell-Mex and B.P., Limited), H. E. Osborn (chief accountant and financial adviser, British Transport Commission), B. Smallpeice (managing director, British Overseas Airways Corporation), and Brigadier A. E. M. Walter (Head of International Transport Branch, Ministry of Transport and Civil Aviation); Mr. R. R. Beckinsale (United Glass Bottle Manufacturers, Limited) will represent associate members.

* * *

Mr. W. D. Sutherland, B.Sc., Ph.D., A.M.I.E.E., has been appointed chief engineer (electrical) to C.A.V., Limited. He was responsible for the development of the C.A.V. automatic gearchange control equipment some two years ago.

* * *

Mr. I. G. White has been appointed assistant engineer (modernisation), chief civil engineer's office, London Midland Region, B.R. Mr. A. R. Ogley becomes modernisation assistant to operating officer.

* * *

To mark the biennial conference on standardisation of railway mechanical equipment on overseas railways, organised by the Crown Agents this week, the Locomotive and Allied Manufacturers' Association gave a cocktail party in the delightful Trevithick suite of Locomotive House, Westminster, on May 19.

* * *

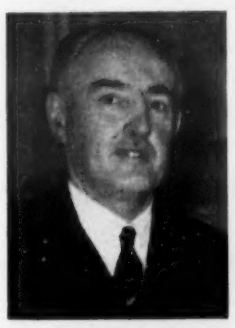
Winner of the 1958 award of the Institute of Traffic Administration is Mr. J. Little (Southern Region, B.R.) for his paper "Work, Labour and Management." The award is £25 cash and books to the value of £10. Second prize was won by Mr. B. C. Clarke (Leicester City Transport) for his paper "The Bus Passenger and the Law." He wins £15 in cash and books value £5.

* * *

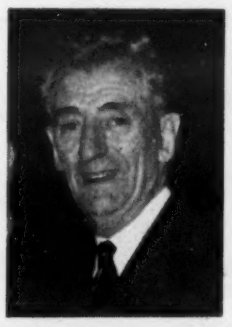
At its first meeting on May 19 the new national council of the Passenger Vehicle Operators Association elected as chairman of the association for the year 1958-59 Mr. F. J. Speight, director of George Ewer and Co., Limited. Mr. W. Dodds (James Dodds and Sons, Limited, Troon) was elected a vice-chairman and Messrs. H. W. B. Richards (Salopia Saloon Coaches, Limited, Whitchurch), T. Hoyle (T. Hoyle and Son, Halifax) and A. Bolton (Ribblesdale Coachways, Limited, Blackburn) were re-elected vice-chairmen.

* * *

Mr. N. T. O'Reilly, O.B.E., a director of Robson's Border Transport, Limited, Carlisle, was last week elected to the office of vice-chairman of the Road Haulage Association for the ensuing year. Mr. O'Reilly, who assists Mr. Stanley Robson, the principal director of the Carlisle business is senior partner in a firm of chartered accountants. He has industrial, accounting and agricultural interests in Cumberland and received the O.B.E. in the New Year Honours List this year for political services. He is chairman of the R.H.A. national finance committee. Mr. H. H. Crow, M.Inst.T., who has been re-elected a vice-chairman, is governing director of the Crow Carrying Co., Limited (MODERN TRANSPORT, June 9, 1956), a past chairman of the Metropolitan and South Eastern area of the R.H.A., a member of the transport panel of the Transport Tribunal and lately hon. librarian of the Institute of Transport. Mr. D. O. Good, another re-elected vice-chairman, is proprietor of Pioneer Haulage, Limited, of Beer, Devon (see MODERN TRANSPORT, June 16, 1956); he was made vice-chairman of the national finance committee in 1954 and has led for the road side in his area road-rail negotiating committee. Mr. J. B. Mitchell, first elected a vice-chairman in 1955 and re-elected this year, trained as a motor engineer with the Scottish Motor Traction Co., Limited. He had joined the Scottish Central Carting Co., Limited, Leith, in 1901 and has been managing director since 1950. He was elected chairman of the Scottish area of the R.H.A. in 1956.



Mr. N. T. O'Reilly



Mr. H. H. Crow

Mr. D. O. Good

Mr. J. B. Mitchell

Thompson Bros. (Bilston), Limited, has appointed Mr. E. E. Pheasey works director.

* * *

Mr. P. J. Sims, M.I.Mech.E., M.I.Mar.E., manager of the marine and industrial division of A.E.C., Limited, retired on May 17 after 40 years of service with the L.G.O.C. (forerunner of London Transport) A.E.C. and A.C.V. He is succeeded by Mr. L. Robinson, A.M.I.Mech.E.

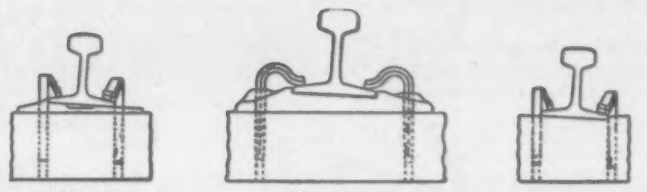
* * *

A delegation from the British Transport Commission and British Railways, led by Sir John Benstead, deputy chairman of the Commission, left London on Tuesday this week for a three-weeks' tour of the Russian railways as guests of the Ministry of Railways, U.S.S.R. The visit follows a similar tour of British Railways made by a party of seven Soviet railway experts last November. The British party will visit Soviet railway works and installations, particularly those where important developments, have been carried out in recent years. It comprises:

Sir John Benstead; Messrs. M. G. Maycock (chief civil engineer, Scottish Region); R. A. Green (signal engineer, Eastern Region); E. S. Cox (mechanical engineer—development, British Railways Central Staff); A. H. Emerson (assistant electrical engineer, London Midland Region); L. W. Ibbotson (assistant to chief operating superintendent, Western Region); and L. W. King (assistant, department of chief of general duties, B.T.C. headquarters).

New offices have been built to provide a convenient meeting place in the West End for those who have credit finance proposals to discuss with United Dominions Trust, Limited, at 29 Pall Mall, S.W.1. This offers an easier course, London traffic being what it is, than paying a visit to United Dominions House in the City. The offices have been constructed in and around what was formerly the swimming pool of the Ladies' Section of the Junior Carlton Club. They consist, on the lower floor, of a reception office and two discussion rooms, and on the upper floor, of a large meeting room and "the usual offices." Mr. J. S. Colchester is in charge of the new office.

ELASTIC RAIL SPIKES



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ELASTIC RAIL SPIKE CO. LTD.
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Telephone: MINCING LANE 3222 Cables: ELASPIKE, LONDON

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DOOR GEAR
for 105 D/D vehicles

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The wide front unobstructed doorway obtained with an outside sliding door. The door is operated by a long stroke air engine and controlled by the driver, with a straight pneumatic valve. Emergency release valves are fitted inside and outside the doorway.

AND FOR INDUSTRIAL USE—*Peters' Power operated Door Equipment is most successfully installed in many factories, shops, hotels, hospitals, etc. Illustrated brochures on request.*

PETERS

also supply for the road transport industry Folding and Gliding Doors, Single and Double Power Operated Door Equipment of all descriptions. Seat Frames and Upholstered Seats. Blinds and Ventilators, Pagwood Panelling, Insulation Boards, Vehicle Washing Plant, Welding Plant, Electrodes and Accessories.

IMPORTANT CONTRACTS

£2,500,000 Pacific Airport

WORTH £2,500,000, a contract for the reconstruction of the airport at Nadi, Fiji Islands, has been awarded by the New Zealand Ministry of Works to Taylor Woodrow (Overseas), Limited, London, in association with D. B. Waite, Auckland, New Zealand. When completed in December, 1959, the airport will be able to handle the largest types of jet air liners. The contract includes the extension of existing runways, aprons and taxi tracks. It will involve 750,000 cubic yards of excavation and the placing of 80,000 cubic yards of concrete. Work begins in June, when a team of specialists from the Taylor Woodrow group will have arrived at the site.

South Wales Docks Contracts

The British Transport Commission (South Wales Docks) has placed the following contracts:

Scottish Cables, Limited, for provision of cables for crane plugs, bulk discharging berth, No. 2 Dock, Barry.

Prince of Wales Dry Dock Co. (Swansea), Limited, for general reconditioning of s.h.b. *Foremost 44*.

Two-Pedal Buses for Ghana

An order placed with Leyland Motors, Limited, through the Crown Agent for eight Worldmaster buses for Accra Municipality will introduce the Pneumo-cyclic semi-automatic gearbox and two-pedal control to Ghana. Accra has already had many years' favourable experience of British diesel vehicles, having taken delivery of some 160 Albion buses since 1948.

North Eastern Region Contracts

The North Eastern Region of British Railways has placed the following contracts:

Dow-Mac (Products), Limited, Stamford, for manufacture of deck units for short-span occupation bridges.

George Cohen Sons and Co., Limited, London, for a Jones KL10-10 mobile crane.

A. Robinson (Contractors), Limited, Middlesbrough, for modernisation of Stockton goods shed, forwarding shed and new amenities.

Ransomes, Sims and Jefferies, Limited, Ipswich, for one 1-ton mobile slewing crane for Stockton South.

Marconi's New Zealand Repeat Order

The New Zealand Post Office has awarded a further contract to Marconi's Wireless Telegraph Co., Limited, for the supply of four multi-channel v.h.f. radio links. The order, which has an approximate value of £90,000, is consequent upon the satisfactory performance of Marconi radio-link equipment which for the past few years has been in operation between Hamilton and Paeroa and was obtained through the company's agent in New Zealand, Amalgamated Wireless (Australasia), Limited.

New Lymington—Yarmouth Ferry

The British Transport Commission has placed an order with the Ailsa Shipbuilding Co., Limited, Troon, for a double-ended ferry for the Lymington—Yarmouth (I.O.W.) service for delivery in October, 1959. The vessel will be of about 300 tons gross, 148 ft. in length, 41 ft. 6 in. in breadth, and will have a draught of 6 ft. Voith-Schneider propellers will be fitted fore and aft. The vessel will be capable of carrying about 620 passengers as well as commercial and private vehicles or general cargo on deck.

S.A.S. Orders G.E.C. Galley Equipment

The General Electric Co., Limited, has received an order from Scandinavian Airlines System for the supply of 100 specially designed air circulation catering ovens. The order is worth £25,000. The ovens are for installation in all the DC7, DC8 and Caravelle jet air liners which S.A.S. has on order. This follows orders for aircraft catering equipment received by G.E.C. recently from B.O.A.C. for the galleys of its new Comet 4 fleet, and from B.E.A. for its Vickers Vanguard turbo-prop air liners due to go into service in 1960, and brings the total number of airlines using G.E.C. galley equipment to 57.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

May 29—Italy.—H.Q. Allied Forces Southern Europe for six ¼-ton and six 2½-ton capacity PLATFORM LORRIES, all petrol-engined. Tenders to the Headquarters Commandant of the H.Q. Allied Forces Southern Europe, Naples. (ESB/12143/58.)

May 30—Costa Rica.—Pacific Railroad for two DIESEL-HYDRAULIC LOCOMOTIVES for mixed traffic on 3 ft. 6 in. gauge. Type B or Bo Bo; Min. weight in service 25 metric tons; Max. weight 35 metric tons; Max. shunting speed 25 k.p.h.; Max. speed in passenger or goods services 50 k.p.h. Tenders to La Proveeduria del Ferrocarril Electrico al Pacifico, San Jose. (ESB/12059/58.)

June 2—Pakistan.—Ministry of Communications for 50 sets of STEEL SLEEPERS for 1 in 12 broad-gauge turnouts and 275,000 transverse metre-gauge STEEL SLEEPERS. Tenders to the Office of the Joint Director, Civil Engineering, Railway Division, Ministry of Communications, Government of Pakistan, Room 311, 2nd Floor, Pakistan Secretariat Building, Karachi. (ESB/11609/58.)

June 3—Formosa.—International Co-operation Administration for 14 6 cu. yd. DUMP TRUCKS complete, two AMBULANCES (station wagon), g.v.w. 4,500 lb.; two heavy-duty lorry CHASSIS with cabs suitable for quarry, river bed and loose gravel road conditions, g.v.w. 29,000 lb.; eight lorry CHASSIS with cabs, g.v.w. 17,000 lb., for use under similar conditions; and four 1-ton capacity four-wheel-drive open UTILITY VEHICLES. Tenders to the Central Trust of China, Purchasing Department, 68 Yen Ping Nan Road, Taipei, Taiwan. (ESB/11497/58/I.C.A.)

June 4—Greece.—State Procurements Service for 12 four-wheel-drive ¾-ton capacity TRUCKS with canvas tilts. Tenders to the Offices of the State Procurement Service, 56 Panepistimiou Street, 3rd Floor, Athens. (ESB/12752/58.)

June 6—Union of South Africa.—South African Railways for two heavy-haulage TRACTORS. Photocopies of tender documents from Export Services Branch, B.O.T., price 15s. (ESB/11967/58.)

Export Opportunity—U.S.A.—Storecrafters, P.O. Box 14368, Houston, 21, Texas, is interested in receiving offers from United Kingdom manufacturers of water-cooled four-cylinder DIESEL ENGINES of about 2,300 c.c. to deliver 60 h.p. at 3,200 r.p.m., preferably with horizontally-opposed cylinders for marine installation. (ESB/12706/58.)

P.V.O.A. PROTEST

Fuel Deliveries

THE Passenger Vehicle Operators' Association announces that it has made its protest to the main oil companies in London against their continued support of the action of fuel vehicle drivers withholding fuel supplies from coach operators who are not prepared to be coerced into signing a certificate that they will undertake no additional coach work during the London bus strike.

Existing supplies of fuel in the possession of coach operators will ensure that no member of the travelling public using the road services of independent coach operators from all parts of London and elsewhere to the coast for holiday journeys, for day trips and for private parties, need be inconvenienced.

SHIPPING and SHIPBUILDING

Export Shed Palletisation

INTRODUCTION of mechanical handling, in the form of palletisation, at certain export berths in the Port of London had increased the rate of loading ship by about 20 per cent and, equally important, the number of handlings of a package was reduced from five to two. Mr. E. S. Tooth, who is dock superintendent of the P.L.A. India and Millwall group of docks, had this to report in a paper he presented last Friday at the Materials Handling Convention which coincided with the Mechanical Handling Exhibition at Earls Court. The export mechanisation scheme was based on the assumption that goods would be palletised on receipt at the shed and kept on pallet until they were placed in the ship's hold. This concept had been 98 per cent achieved. It needed only nine men to man a mechanised shed, compared with 16 previously, but ports could not introduce mechanisation without the co-operation of other industries; many factors, even the weather were involved.

Carryings on Heysham-Belfast Route

DURING its first four weeks of operation on the Heysham—Belfast service the B.R. motorship *Container Enterprise* carried 1,481 containers and 444 tons of other traffic. The vessel has a capacity for at least 65 large containers and the London Midland Region will be putting another similar vessel into service later this year to cater for growing traffic.

Pilot Launch for Bristol

AT its Woolston Works, John I. Thornycroft and Co., Limited, is building a pilot launch designed to the order of the Bristol Pilotage Authority. The launch was on May 15. The craft has an overall length of 54 ft., 14 ft. beam and an extreme draft of 4 ft. 5½ in. and at a speed of 12 knots on full power should have a range of approximately 400 nautical miles. The hull and decks are of double skin African mahogany, the power unit is a Rolls-Royce C6SFLM marine diesel of 230 b.h.p.

For Phosphate Trade

PASSENGER, officers, engineers and new accommodation amidships to a standard in excess of the latest M.o.T. regulations is to be provided in the new 13,950-ton motor passenger cargo ship *Triellis*, launched last week at Govan by Harland and Wolff, Limited, for the British Phosphate Commissioners. Air conditioning is installed throughout all accommodation. The Commissioners operate services in the phosphates trade between Nauru and Ocean Islands to Australia and New Zealand and between Christmas Island and Australia and Singapore.

Mersey Docks Dues

CERTAIN adjustments are to be made by the Mersey Docks and Harbour Board in the charges paid on goods imported and exported through Merseyside. In effect, these adjustments mean that all goods exported to places on the mainland of Great Britain will now have to pay outward coastwise town dues which have not been charged since 1955, but there will be a concession of 25 per cent on all goods shipped coastwise and to Northern Ireland and Eire, the Isle of Man and the Channel Islands. The surcharge on the inward and outward dock rates and town dues paid on certain commodities both foreign and coastwise will be adjusted to bring them into line with other commodities on which this surcharge was increased from 12½ per cent to 25 per cent last year.

L.T.E. RAILWAYMEN

Wage Negotiations

A MEETING was held on May 20 of the London Transport Railway Negotiating Committee, which comprises representatives of the London Transport Executive and of the National Union of Railwaymen, the Associated Society of Locomotive Engineers and Firemen, and the Transport Salaried Staffs' Association. The London Transport Executive proposed that there should be an increase of 3 per cent in standard rates of pay with effect from June 30, 1958, in line with the increase which is being made in the pay of similar staff working on British Railways.

The London Transport Executive representatives said that it was intended to make certain economies in the operation of the underground railways, which would probably include a shortening of the daily period during which the railways were in operation, and some reduction in service where traffic demand was small. It was agreed that such proposals would be the subject of discussion at an early meeting of the London Transport Railways Joint Consultative Committee.

The Executive's representatives agreed that, if there were changes in the British Railways wages structure as a result of a comprehensive examination which altered the relationship between British Railways and London Transport railway wages, the Executive, in conjunction with the trade unions, would review London Transport railway wages in so far as they were affected by the changes on British Railways. The trade union representatives undertook to report these proposals to their executive committee.

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

S. Smith and Sons (England)

S. Smith and Sons (England), Limited, is paying an interim dividend on the ordinary of 3¢ per cent.

Kerrys (Great Britain)

The results of Kerrys (Great Britain), Limited, for 1957 show group net profit at £197,573 (£175,212) before tax £115,150 (£91,400). Dividend 12½ per cent (same) on increased capital.

Rolls Royce

Rolls-Royce, Limited, is paying a final dividend of 15 per cent for 1957; an interim of 5 per cent was paid in December, 1957. Profit before taxation was £5,370,334 (£5,330,543); taxation took £3,050,000 (£3,200,000), leaving £2,320,334 (£2,130,543).

Associated Commercial Vehicles

Associated Commercial Vehicles, Limited, has declared an interim for the year ended September 30, 1958, at the rate of 1s. 6d. per £1 unit of stock. Turnover and profit for the six months to the end of March, 1958, have fallen as compared with last year. Considerable rationalisation of production facilities has been effected, it is stated, and more is planned, but the benefits arising therefrom will not be fully apparent during the current year. Export orders have increased, but a revival in home demand is not yet in sight. The total order book shows little change from this time last year.

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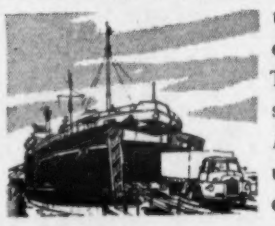

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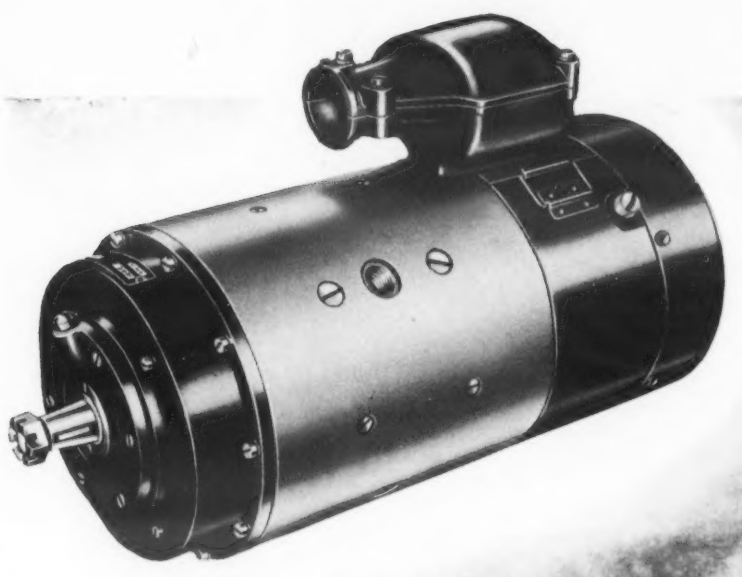

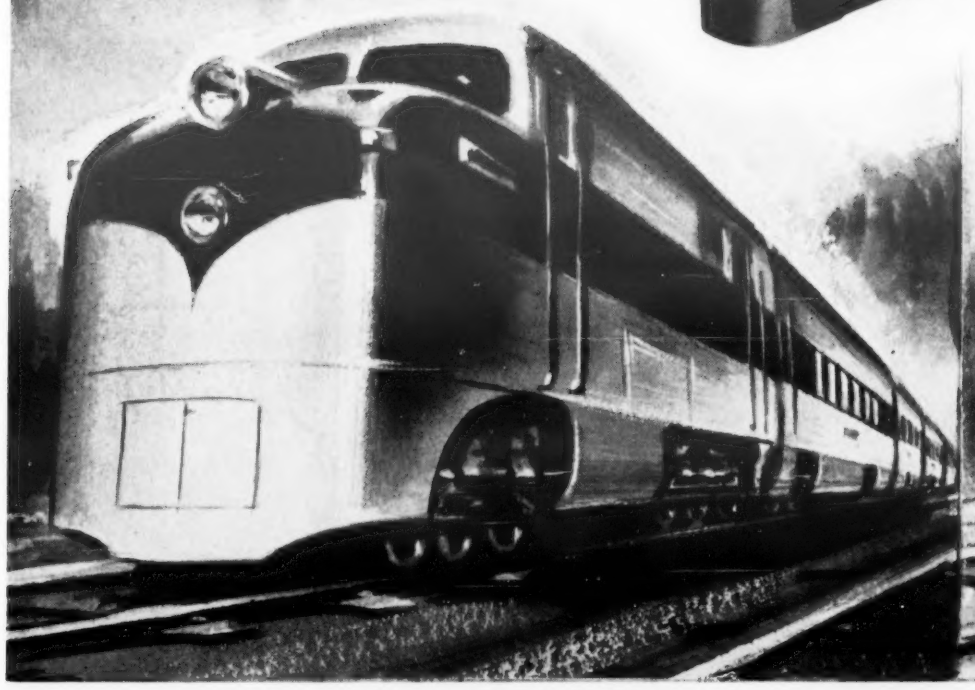

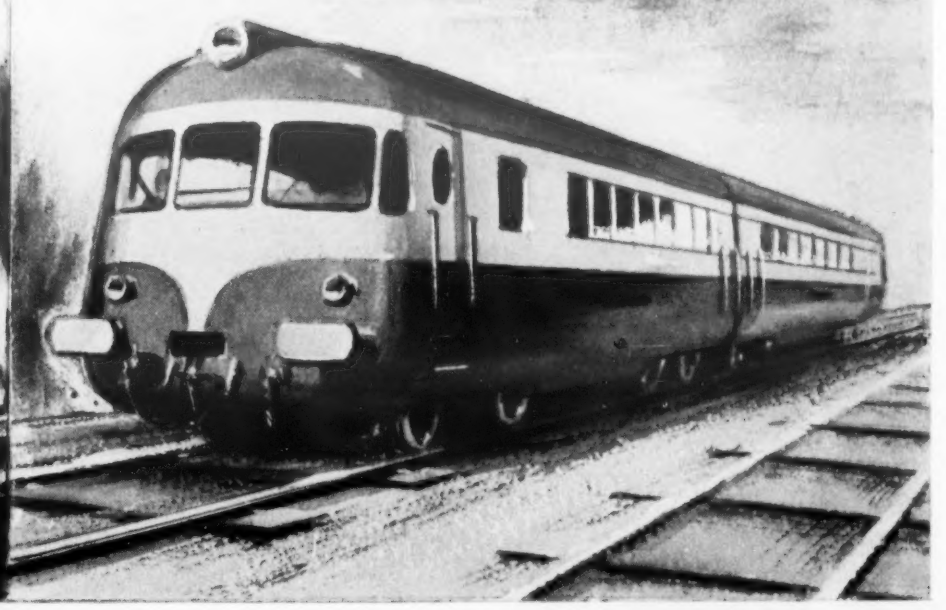

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Photographed by permission of London Transport Executive

Westinghouse O.C.S. Signal Panel at St. Pancras. This is the seventh London Terminal Station now working under the control of Westinghouse signal equipment.

Photographed by courtesy of British Railways, London Midland Region

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